ANL/EVS/AGEM/TR-08-15

Argonne NATIONAL LABORATORY

April 2008 Monitoring Report for Morrill, Kansas

Environmental Science Division

USDA United States Department of Agriculture

Work sponsored by Commodity Credit Corporation,
United States Department of Agriculture

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by
Applied Geosciences and Environmental Management Section
Environmental Science Division, Argonne National Laboratory

July 2008

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Contents

Figures

Tables

Notation

AGEM	Applied Geosciences and Environmental Management
AMSL	above mean sea level
BGL	below ground level
°C	degree(s) Celsius
CCC	Commodity Credit Corporation
COC	chain of custody
EDB	ethylene dibromide
EPA	U.S. Environmental Protection Agency
ft	foot (feet)
gpm	gallon(s) per minute
hr	hour
in.	inch(es)
KDHE	Kansas Department of Health and Environment
L	liter(s)
µg/kg	microgram(s) per kilogram
µg/L	microgram(s) per liter
µS/cm	microsiemen(s) per centimeter
mg/L	milligram(s) per liter
mV	millivolt(s)
ORP	oxidation-reduction potential
SOP	standard operating procedure
TOC	top of casing
USDA	U.S. Department of Agriculture
VOC	volatile organic compound

April 2008 Monitoring Results for Morrill, Kansas

1 Introduction and Background

In September 2005, the Commodity Credit Corporation of the U.S. Department of Agriculture (CCC/USDA) initiated periodic sampling of groundwater in the vicinity of a grain storage facility formerly operated by the CCC/USDA at Morrill, Kansas. The sampling at Morrill is being performed on behalf of the CCC/USDA by Argonne National Laboratory, in accord with a monitoring program approved by the Kansas Department of Health and Environment (KDHE), to monitor levels of carbon tetrachloride contamination identified in the groundwater at this site (Argonne 2004, 2005a). This report provides results for the most recent monitoring event, in April 2008.

Under the KDHE-approved monitoring plan (Argonne 2005b), groundwater was initially sampled twice yearly for a recommended period of two years (in fall 2005, in spring and fall 2006, and in spring and fall 2007). The samples were analyzed for volatile organic compounds (VOCs), as well as for selected geochemical parameters to aid in the evaluation of possible natural contaminant degradation (reductive dechlorination) processes in the subsurface environment. During the recommended two-year period, the originally approved scope of the monitoring was expanded to include vegetation sampling (initiated in October 2006) and surface water and stream bed sediment sampling (initiated in March 2007, after a visual reconnaissance along Terrapin Creek [Argonne 2007a]).

The analytical results for groundwater sampling events at Morrill in September 2005, March 2006, September 2006, March 2007, and October 2007 were documented previously (Argonne 2006a,b, 2007b, 2008). Those results consistently demonstrated the presence of carbon tetrachloride contamination, at levels exceeding the KDHE Tier 2 risk-based screening level (5.0 μg/L) for this compound, in a groundwater plume extending generally south-southeastward from the former CCC/USDA facility, toward Terrapin Creek at the south edge of the town. The results of those five monitoring events gave little indication of consistent changes in the contaminant concentrations at the individual monitoring points or of plume migration. Low levels (≤ 1.3 μg/L) of carbon tetrachloride were persistently detected at monitoring well MW8S, however, on the bank of an intermittent tributary to Terrapin Creek. This observation suggested a possible risk of contamination of the surface waters of the creek. That concern became the driving force for ongoing monitoring and consideration of possible remedial options for Morrill.

In light of the early findings, in 2006 the CCC/USDA recommended expansion of the approved monitoring program to include the collection and analysis of surface water samples along Terrapin Creek (Argonne 2006a). At the request of the KDHE (2007a), locations for both surface water and shallow sediment sampling were discussed with the KDHE in January 2007. An addendum to the existing monitoring plan and a standard operating procedure (SOP AGEM-15) for sediment sampling were submitted to the KDHE on the basis of these discussions (Argonne 2007c,d). To supplement the original scope of the monitoring, Argonne also sampled natural vegetation along Terrapin Creek in October 2006, April 2007, and July 2007 for analyses for VOCs. The results of the plant tissue analyses were reported previously (Argonne 2008).

The April 2008 sampling event reported here represents a continuation of the two-year monitoring program, as requested by the KDHE (2007b). The sampling is presently conducted, in accord with the monitoring plan (Argonne 2005b) and the addendum to that plan (Argonne 2007a), in a network of 12 monitoring wells and 3 private wells (Figure 1.1), at locations approved by the KDHE.

An event that affects the results of the April 2008 monitoring is the installation of an irrigation well, owned by Kent Grimm, on the south side of Terrapin Creek, near monitoring well MW6S. The WWC-5 well registration form (in Appendix A) indicates that the well diameter is 16 in., that artesian flow is occurring at a rate of 250 gpm, and that installation occurred on March 10, 2008.

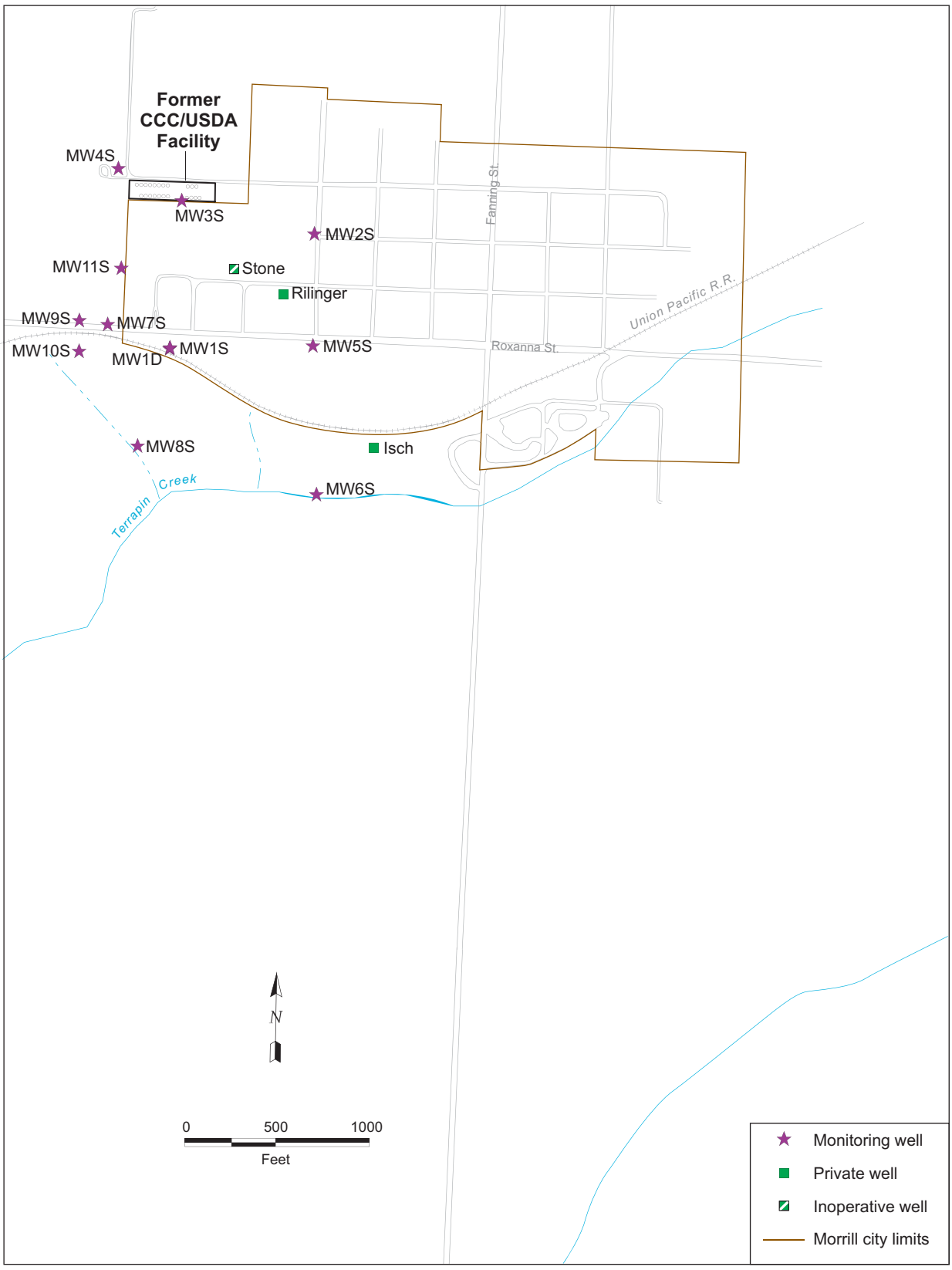

FIGURE 1.1 Monitoring network at Morrill, as of April 2008.

2 Sample Collection and Analysis Activities

2.1 Measurement of Groundwater Levels

Before each well was purged in preparation for sampling on April 14-15, 2008, a water level indicator was used (where possible) to measure the depth to groundwater and the total depth from the top of the well casing, with an accuracy of ± 0.01 ft.

Data recorders currently installed in wells MW1S-MW4S and MW6S-MW8S are gathering long-term data on the groundwater elevation and gradient at Morrill. The data recorders in these wells were downloaded on January 8, 2007; on July 27, 2007; and on April 30, 2008. Water levels were measured manually in all monitoring wells on these dates, as well as in conjunction with the sampling events on October 1-3, 2007, and April 14-15, 2008.

The groundwater level data are discussed in Section 3.1.

2.2 Monitoring and Private Well Sampling and Analyses

Monitoring wells MW1D and MW1S-MW11S and the Stone, Isch, and Rilinger private wells (Figure 1.1) were sampled on April 14-15, 2008. Samples were collected in this event by using a low-flow bladder pump.

After measurement of water levels and dissolved oxygen levels, each monitoring point was purged of a small volume. Field measurements of temperature, pH, and conductivity were taken during purging until the measurements stabilized. Field measurements of iron(II) and oxidation reduction potential (ORP) were made as outlined in the monitoring plan (Argonne 2005b). Low-flow sampling was according to U.S. Environmental Protection Agency (EPA) procedure EPA/540/S-95/504 (Puls and Barcelona 1996) and the equipment manufacturers' instructions. All field analyses were performed in accord with procedures in the *Master Work Plan* (Argonne 2002). The sequence of activities during the April 2008 well sampling event is summarized in Appendix B.

Groundwater samples intended for VOCs and selected geochemical analyses identified in the monitoring plan (Argonne 2005b) were collected in appropriate laboratory containers,

labeled, packaged, and chilled to 4°C by placement in ice-filled coolers. The samples were shipped via an overnight delivery service to the Applied Geosciences and Environmental Management (AGEM) Laboratory at Argonne for VOCs analyses with EPA Method 524.2 (EPA 1995). Separate aliquots of selected samples (chosen in the field) were shipped to Envirosystems, Inc., Columbia, Maryland, for verification VOCs analyses.

As recommended at the end of the original two-year monitoring period (Argonne 2008), routine analyses for the attenuation parameters iron(II), sulfate, sulfide, methane, total organic carbon, carbon dioxide, alkalinity, chloride, and dissolved hydrogen were discontinued after the October 2007 sampling event.

The analytical results are presented and discussed in Section 3.2.

2.3 Surface Water and Sediment Sampling and Analyses

At the request of the KDHE (2007a), surface water samples and corresponding samples of the underlying shallow sediments in the creek bed were collected for VOCs analyses in March 2007, October 2007, and April 2008, at five locations along Terrapin Creek (Figure 2.1), as outlined in the addendum (Argonne 2007c) to the monitoring plan (Argonne 2005b). The sampling was conducted in accord with procedures in the *Master Work Plan* (Argonne 2002) and SOP AGEM-15 (Argonne 2007d). Surface water flow in Terrapin Creek south of Morrill originates at the outfall from an earthen dam and retention pond located approximately 1,900 ft southwest of the former CCC/USDA facility (Figure 2.1). Surface water and sediment sampling location SMB, which is directly downstream of this outfall, is believed to lie upgradient, or cross-gradient, to groundwater flow (and hence possible contaminant migration) from the vicinity of the former CCC/USDA facility. (See Section 3.1.) Sampling locations SM1-SM4 were selected to lie downgradient and downstream from the carbon tetrachloride detections previously identified at MW8S and elsewhere in the monitoring well network.

Samples of surface water were collected in appropriate containers, labeled, preserved at 4°C, and shipped by an overnight delivery service to the AGEM Laboratory for VOCs analyses with EPA Method 524.2 (EPA 1995). Samples of the shallow creek bed sediments were collected by directly scooping the materials into appropriate laboratory containers (Argonne

2007d). The samples were labeled, preserved on dry ice, and shipped to the AGEM Laboratory for sample preparation and VOCs analyses with modified EPA Methods 5030B and 8260B.

2.4 Vegetation Sampling and Analyses

The April 2008 monitoring event did not include vegetation sampling for the detection of VOCs in mature native vegetation from established trees along Terrapin Creek. The experience gained by the CCC/USDA and Argonne in monitoring phytoremediation treatment programs in Nebraska and Illinois indicates that little uptake of contaminants into tree tissues is expected this early in the growing season (e.g., Argonne 2008b). Tree sampling is scheduled for mid July 2008. Further information is in Section 3.4.

2.5 Handling and Disposal of Investigation-Derived Waste

Purge water generated as potentially contaminated investigation-derived waste was containerized on-site. The accumulated purge water was sampled and analyzed by Pace Analytical Services, Inc., Lenexa, Kansas. Methods used were EPA Method 5030/8260 for VOCs and EPA Method 504.1 for ethylene dibromide (EDB). Contamination was not detected. With the approval of KDHE (2008), the waste purge water was discharged on-site. The analytical results for the waste purge water are in Appendix C.

2.6 Quality Control for Sample Collection, Handling, and Analysis

The quality control/quality assurance procedures followed during the April 2008 monitoring event are described in detail in the *Master Work Plan* (Argonne 2002) and SOP AGEM-15 (Argonne 2007b). These procedures are summarized as follows:

- Sample collection and handling activities were monitored by the documentation of samples as they were collected and the use of chain-of-custody forms and custody seals to ensure sample integrity during handling and shipment.

- Samples designated for VOCs analyses were received with custody seals intact and at the appropriate preservation temperature. All samples were analyzed within the required holding times.

- Quality control samples (a field blanks and trip blanks) were collected to monitor sample collection and handling activities. Method blanks were analyzed to monitor analytical methodologies. All quality control samples analyzed by the AGEM Laboratory were free of carbon tetrachloride and chloroform contamination.

- Groundwater, surface water, and sediment samples were analyzed for VOCs at the AGEM Laboratory with the purge-and-trap method on a gas chromatograph-mass spectrometer system. Calibration checks with each sample delivery group were required to be within ±20% of the standard. Surrogate standard determinations performed on samples and blanks were within the specified range of 80-120% for all samples, in either the initial analysis or a successful reanalysis.

- In accordance with the procedures defined in the *Master Work Plan* (Argonne 2002), the analyses of water samples at the AGEM Laboratory were verified by a second laboratory. Three groundwater samples collected during the April 14-15, 2008, monitoring event — from monitoring wells MW1S, MW3S, and MW7S — were also submitted to Envirosystems for analysis according to the EPA's Contract Laboratory Program methodology. Low-level carbon tetrachloride contamination in monitoring wells MW3S and MW7S (7.4 µg/L and 8.6 µg/L, respectively, in analysis at the AGEM Laboratory) was verified in analysis by Envirosystems (8.2 µg/L and 10 µg/L, respectively). Carbon tetrachloride was not detected in the sample from MW1S by either laboratory. Chloroform was not detected by either laboratory in any of the samples. Methylene chloride was detected in all samples analyzed by Envirosystems, including the associated blanks, but it was not detected in analyses by the AGEM Laboratory. Summary pages for the verification organic analyses for sampling conducted on April 14-15 are in Appendix D.

- To confirm an apparent effect of the newly installed Grimm irrigation well on contaminant levels observed in the April 14-15, 2008, monitoring event, follow-up sampling was conducted on April 22-23, 2008. In this follow-up event (reported toward the end of Table 3.2), samples were collected from five monitoring wells (MW1S, MW3S, MW5S, MW7S, and MW11S), at one private well monitoring location (Isch), and from the newly installed Grimm irrigation well (TD12) for VOC analysis by both the AGEM Laboratory and Envirosystems. Results for carbon tetrachloride were consistent between the two laboratories, as follows:

  - No carbon tetrachloride or trace concentrations detected by either laboratory in samples from wells MW1S, MW3S, MW5S, Isch, and TD12.

  - Low concentrations detected in the sample from well MW7S (8.3 µg/L in analysis by the AGEM Laboratory; 7.6 µg/L in verification analysis by Envirosystems).

  - Higher concentrations detected in the sample from MW11S (42 µg/L by the AGEM Laboratory; 46 µg/L by Envirosystems [verification]).

  Summary pages for the verification organic analyses at Envirosystems, Inc. for sampling conducted on April 22-23, 2008, are in Appendix D.

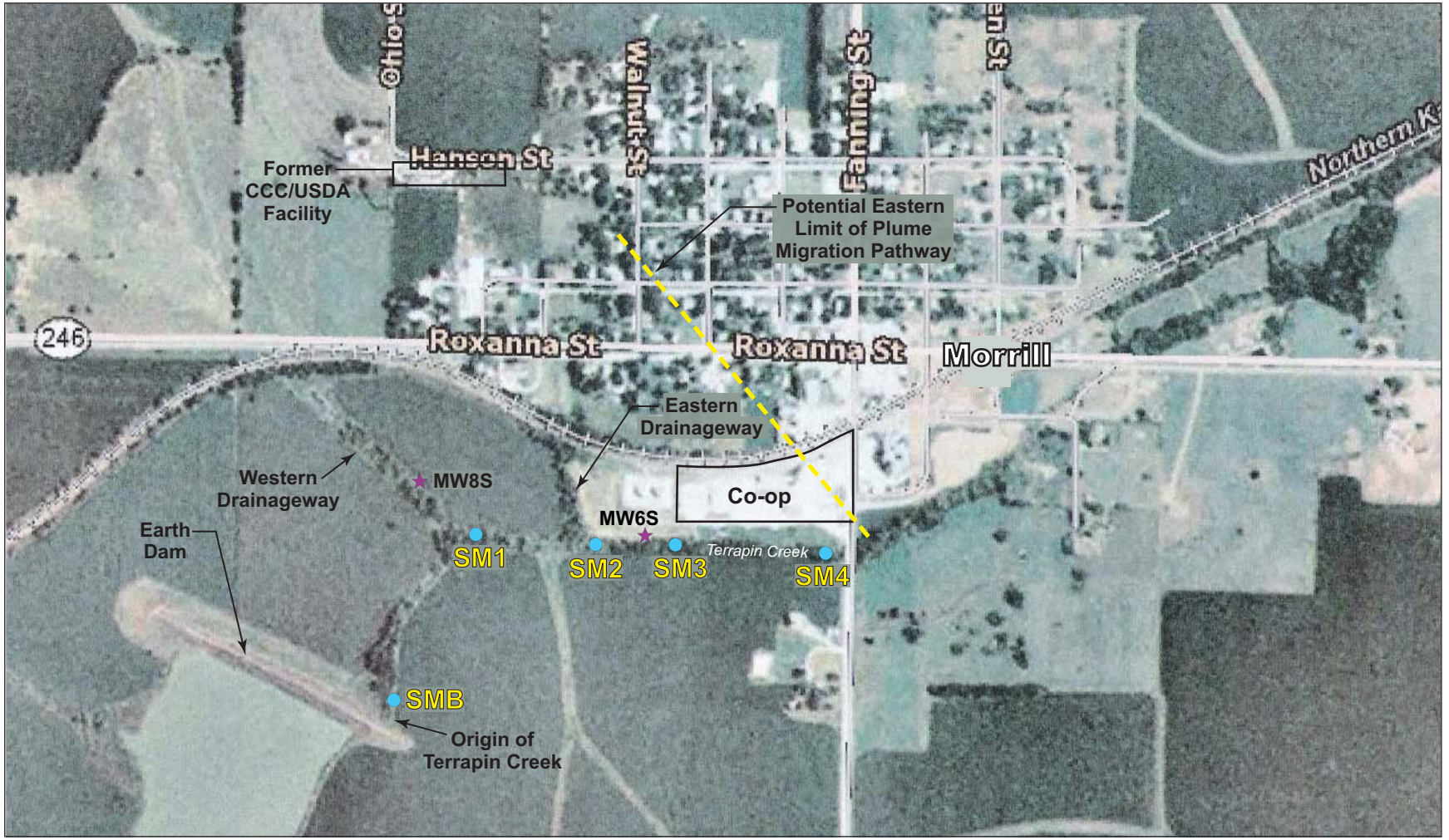

FIGURE 2.1 Locations of surface water and creek bed sediment sampling (SM1-SM4, SMB) along Terrapin Creek at Morrill in April 2008.

3 Results and Discussion

3.1 Groundwater Level Data

Depths to groundwater were measured manually in all available monitoring wells on January 8, 2007, July 27, 2007, October 1-3, 2007 (during sampling), April 14-15, 2008 (during sampling), and April 30, 2008. The hand-measured water level data are in Table 3.1. The tables are grouped at the end of the Section 3 text, before the figures.

The potentiometric surface at Morrill, based on manual measurements on January 8, 2007, and July 27, 2007, is depicted in Figures 3.1a,b, respectively. These results indicated a groundwater flow direction toward the south-southeast from the former CCC/USDA facility. Persistently low water levels observed at MW11S empirically suggested the apparent presence of a groundwater "sink" southwest of the former facility in the vicinity of this monitoring well.

The potentiometric surface at Morrill, as interpreted from manual measurements on April 30, 2008, is depicted in Figure 3.1c. The groundwater flow direction on April 30, 2008, appears to be shifted somewhat toward the west, in comparison to the January 8, 2007, and July 27, 2007, depictions (Figures 3.1a,b, respectively). This shift appears to be a response to an effect in the area of MW7S. Additional data from ongoing monitoring is necessary to clarify this observation.

Data from the long-term recording transducers installed in monitoring wells MW1S-MW4S and MW6S-MW8S for the period January 2007 to April 2008 are summarized in Figure 3.2. Groundwater levels at the site rose markedly in April-May 2007 and then returned to more typical levels. Responses to individual recharge events are most prominent in wells MW1S-MW3S. The traces for wells MW6S and MW8S show the least variation over time, in keeping with the shallow groundwater at these locations near Terrapin Creek.

3.2 Groundwater Analysis Results

The analytical data for VOCs in the groundwater samples collected in April 2008 are in Table 3.2, together with data for the previous sampling events conducted under the KDHE-

approved monitoring plan (Argonne 2005b). The April 2008 data for carbon tetrachloride in groundwater are illustrated in Figure 3.3.

Carbon tetrachloride was detected at 9 of the 15 monitoring locations, at concentrations ranging from < 1 µg/L (in monitoring wells MW1S and MW9S and in the Isch and Stone private wells) to a maximum of 35 µg/L at MW11S. Low levels of chloroform (< 1 µg/L to a maximum of 2.7 µg/L at MW1S) were detected in association with carbon tetrachloride at 4 of the monitoring locations.

In comparison to the October 2007 sampling event, the present results (Table 3.2) indicate significant decreases in carbon tetrachloride concentrations at three locations: (1) from 56 µg/L to < 1 µg/L at MW1S; (2) from 61 µg/L to 8.2 µg/L at MW3S; and (3) from 4.0 µg/L to not detected at MW5S. The changes at MW1S, MW3S, and MW5S were confirmed in follow-up sampling (Table 3.2). These changes stand in contrast to the more consistent contaminant concentrations observed in monitoring events in 2003-2007. Figure 3.4 indicates the position of the contaminant plume in April 2008. Figure 3.5 compares the plume configuration in October 2007 (the previous monitoring event) with the configuration in April 2008.

Chloroform concentrations decreased at MW1S, MW3S, and MW5S (as did carbon tetrachloride concentrations), but elsewhere they were consistent with previous results (Table 3.2).

The results of field measurements on the groundwater samples are in Table 3.3.

3.3 Surface Water and Sediment Analysis Results

The results of VOCs analyses of the surface water and shallow sediment samples collected (at the request of the KDHE) along Terrapin Creek are in Table 3.4.

No carbon tetrachloride was detected in the surface water samples at an analytical method detection limit of 0.1 µg/L. Similarly, no carbon tetrachloride was identified in the associated sediment samples at an analytical method detection limit of 1.0 µg/kg. The April 2008 results therefore indicate that the surface waters and underlying sediments of Terrapin Creek have not been impacted by carbon tetrachloride contamination.

3.4 Vegetation Analysis Results and Observations

The results of sampling of natural vegetation on July 26, 2007, at 18 locations along Terrapin Creek and its intermittent tributaries south and southeast of the former CCC/USDA facility were reported previously (Argonne 2008a). The next tree sampling event is scheduled for mid July 2008.

During the winter of 2007-2008, severe ice storms in the Morrill area decimated trees in the town and along the creek. Many trees designated for sampling as part of the continuing baseline study were destroyed. As the 2008 growing season progresses, the health of the remaining baseline trees will be evaluated, as will their reliability for the detection of VOCs. Alternate trees will be selected as replacements for those destroyed or compromised by the severe winter weather, and the baseline sampling set will be reestablished.

TABLE 3.1 Groundwater levels at Morrill, measured by hand in 2007 and 2008.

		January 8, 2007		July 27, 2007		October 1-3, 2007		April 14-15, 2008		April 30, 2008	
Well	Top of Casing Elevation (ft AMSL)	Depth to Water (ft BGL)	Groundwater Elevation (ft AMSL)	Depth to Water (ft BGL)	Groundwater Elevation (ft AMSL)	Depth to Water (ft BGL)	Groundwater Elevation (ft AMSL)	Depth to Water (ft BGL)	Groundwater Elevation (ft AMSL)	Depth to Water (ft BGL)	Groundwater Elevation (ft AMSL)
MW1S	1124.68	26.79	1097.89	22.20	1102.48	21.65	1103.03	16.20	1108.48	15.96	1108.72
MW1D	1124.63	26.43	1098.20	22.17	1102.46	22.75	1101.88	29.51	1095.12	–	–
MW2S	1137.07	37.83	1099.24	30.50	1106.57	31.17	1105.90	23.55	1113.52	22.84	1114.23
MW3S	1135.76	31.73	1104.03	22.31	1113.45	22.70	1113.06	16.95	1118.81	15.34	1120.42
MW4S	1143.61	42.72	1100.89	30.18	1113.43	31.11	1112.50	26.32	1117.29	24.71	1118.90
MW5S	1122.21	26.50	1095.71	18.47	1103.74	19.55	1102.66	11.20	1111.01	10.75	1111.46
MW6S	1090.97	4.93	1086.04	4.77	1086.20	5.00	1085.97	5.15	1085.82	4.89	1086.08
MW7S	1119.86	20.40	1099.46	13.28	1106.58	12.40	1107.46	7.72	1112.14	7.32	1112.54
MW8S	1098.53	3.31	1095.22	3.06	1095.47	2.20	1096.33	0.70	1097.83	0.61	1097.92
MW9S	1118.31	19.29	1099.02	13.35	1104.96	14.00	1104.31	16.58	1101.73	16.76	1101.55
MW10S	1110.78	11.62	1099.16	6.32	1104.46	6.95	1103.83	9.82	1100.96	9.83	1100.95
MW11S	1133.08	36.45	1096.63	30.90	1102.18	31.55	1101.53	29.90	1103.18	29.81	1103.27

TABLE 3.2 Results of analyses at the AGEM Laboratory for volatile organic compounds in groundwater samples collected at Morrill, October 2003 to May 2008.

Location	Screen Interval (ft BGL)	Sample Date	Concentration (µg/L) Carbon Tetrachloride	Chloroform	Methylene Chloride
MW1S	11-51	10/23/03	33	1.6	ND[a]
		6/2/04	19	0.9 J[b]	ND
		9/13/05	35	1.7	ND
		3/22/06	40	1.8	ND
		9/20/06	23	0.9 J	ND
		3/21/07	23	1.1	ND
		10/1/07	56	2.7	ND
		4/14/08	0.3 J	ND	ND
MW1D	63-88	10/22/03	ND	ND	ND
		6/2/04	ND	ND	ND
		9/13/05	ND	ND	ND
		3/19/06	ND	ND	0.4 J B[c]
		9/20/06	ND	ND	ND
		3/21/07	ND	ND	ND
		10/1/07	ND	ND	ND
		4/14/08	ND	ND	ND
MW2S	13-53	10/22/03	ND	ND	ND
		6/2/04	ND	ND	ND
		9/14/05	ND	ND	ND
		3/21/06	ND	ND	ND
		9/18/06	ND	ND	ND
		3/22/07	ND	ND	ND
		10/3/07	ND	ND	ND
		4/15/08	ND	ND	ND
MW3S	18-48	10/23/03	89	2.7	ND
		6/2/04	110	3.2	ND
		9/13/05	101	3.2	ND
		3/23/06	91	2.6	ND
		9/20/06	49	1.5	ND
		3/22/07	84	2.3	ND
		10/3/07	61	2.0	ND
		4/14/08	8.2	0.4 J	ND
MW4S	17-47	10/21/03	ND	ND	ND
		6/4/04	ND	ND	ND
		9/14/05	ND	ND	ND
		3/21/06	ND	ND	ND
		9/18/06	ND	ND	ND
		3/22/07	ND	ND	ND
		10/3/07	0.5 J R[d]	ND	ND
		1/11/08	ND	ND	ND
		4/14/08	ND	ND	ND

TABLE 3.2 (Cont.)

Location	Screen Interval (ft BGL)	Sample Date	Concentration (µg/L) Carbon Tetrachloride	Chloroform	Methylene Chloride
MW5S	15-55	10/22/03	5.8	ND	ND
		6/2/04	7.0	ND	ND
		9/13/05	6.3	0.2 J	ND
		3/22/06	7.3	0.2 J	ND
		9/20/06	6.4	0.3 J	ND
		3/22/07	6.5	0.4 J	ND
		10/3/07	4.0	0.3 J	ND
		4/14/08	ND	ND	ND
MW6S	10-25	6/3/04	ND	ND	ND
		9/14/05	ND	ND	ND
		3/20/06	ND	ND	ND
		9/18/06	ND	ND	ND
		3/21/07	ND	ND	ND
		10/2/07	ND	ND	ND
		4/15/08	ND	ND	ND
MW7S	20-45	6/3/04	18	ND	ND
		9/12/05	43	1.1	ND
		3/22/06	21	0.4 J	ND
		9/19/06	38	0.7 J	ND
		3/20/07	16	0.4 J	ND
		10/1/07	8.1	0.2 J	ND
		4/14/08	10	0.3 J	ND
MW8S	10-25	6/3/04	ND	ND	ND
		9/14/05	0.9 J	ND	ND
		3/20/06	0.6 J	ND	0.4 J B
		9/19/06	1.3	ND	ND
		3/20/07	0.6 J	ND	ND
		10/2/07	0.8 J	ND	ND
		4/15/08	1.1	ND	ND
MW9S	38.83-53.83	3/22/06	ND	ND	ND
		9/19/06	ND	ND	ND
		3/20/07	ND	ND	ND
		10/1/07	ND	ND	ND
		4/14/08	0.8 J	ND	ND
MW10S	30-45	3/21/06	ND	ND	ND
		9/18/06	ND	ND	ND
		3/21/07	ND	ND	ND
		10/1/07	ND	ND	ND
		4/14/08	ND	ND	ND
MW11S	53-68	3/22/06	39	0.9 J	ND
		9/19/06	53	1.0	ND
		3/20/07	37	0.8 J	ND
		10/1/07	54	1.2	ND
		4/15/08	35	0.8 J	ND

TABLE 3.2 (Cont.)

Location	Screen Interval (ft BGL)	Sample Date	Concentration (µg/L) Carbon Tetrachloride	Chloroform	Methylene Chloride
Isch	–	2/19/04	ND	ND	ND
		9/14/05	ND	ND	ND
		3/23/06	ND	ND	ND
		9/19/06	ND	ND	ND
		3/22/07	ND	ND	ND
		10/3/07	ND	ND	ND
		4/15/08	0.4 J	ND	ND
Rilinger	–	6/4/04	ND	ND	ND
		9/14/05	2.6	0.1 J	ND
		3/19/06	ND	ND	0.4 J B
		9/19/06	ND	ND	ND
		3/29/07	1.3	1.1	ND
		10/3/07	13[e]	0.4 J	ND
		10/8/07	0.4 J	ND	ND
		1/11/08	6.2	0.5 J	ND
		4/15/08	9.9	0.4 J	ND
Stone	43[f]	6/4/04	10	ND	ND
		9/14/05	2.6	0.3 J	ND
		3/19/06	14	0.8 J	0.4 J B
		9/19/06	2.1	ND	ND
		3/22/07	5.4	0.3 J	ND
		10/3/07	2.8	ND	ND
		4/15/08	0.9 J	ND	ND
Follow-up sampling to the April 2008 monitoring event to confirm the status of the contaminant plume					
MW1S	11-51	4/22/08	0.2 J	ND	ND
MW3S	18-48	4/22/08	0.7 J	ND	ND
MW5S	15-55	4/23/08	ND	ND	ND
MW7S	20-45	4/23/08	8.3	0.2 J	ND
MW11S	53-68	4/22/08	42	0.9 J	ND
Isch	–	4/22/08	ND	ND	ND
Sampling of Grimm irrigation well discharge to Terrapin Creek					
TD12	27-67	4/22/08	ND	ND	ND
Sampling of MW1S with the bladder pump intake positioned at 22, 27, and 48 ft BGL					
MW1S	11-51	5/1/08	ND	ND	ND
		5/1/08	ND	ND	ND
		5/1/08	0.3 J	ND	ND
Sampling of MW3S with the bladder pump intake positioned at 26, 38, and 45 ft BGL					
MW3S	18-48	5/1/08	0.4 J	ND	ND
		5/1/08	0.4 J	ND	ND
		5/1/08	0.5 J	ND	ND

TABLE 3.2 (Cont.)

Location	Screen Interval (ft BGL)	Sample Date	Concentration (µg/L) Carbon Tetrachloride	Chloroform	Methylene Chloride
Sampling of MW5S with the bladder pump intake positioned at 20, 28, and 52 ft BGL					
MW5S	15-55	5/1/08	ND	ND	ND
		5/1/08	ND	ND	ND
		5/1/08	ND	ND	ND

[a] ND, not detected at instrument detection limit of 0.1 µg/L.

[b] Qualifier J indicates an estimated concentration below the method quantitation limit of 1.0 µg/L.

[c] Qualifier B indicates that the contaminant was present in the associated method blank.

[d] Qualifier R indicates that the contaminant was present in the associated equipment rinsate. Resampling confirmed that the well was free of contamination.

[e] Sample collected after recent reactivation of well. Well resampled on 1/8/07 and 1/11/08.

[f] Total depth.

TABLE 3.3 Field measurements for groundwater samples collected at Morrill, October 2003 to May 2008.

Location	Screen Interval (ft BGL)	Sample Date	Temperature (°C)	pH	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	ORP (mV)	Iron(II) (mg/L)	Carbon Dioxide (mg/L)
MW1S	11-51	10/23/03	14.6	7.14	933	–[a]	13	–	–
		6/2/04	14.4	7.16	970	–	–	–	–
		9/13/05	15.3	6.95	1,174	7.17	200	0	55
		3/22/06	15.5	7.23	927	9.94	220	0.01	40
		9/20/06	15.7	7.12	973	7.52	–	0.03	40
		3/21/07	16.6	6.48	960	5.45	88	0	40
		10/1/07	16.0	6.80	886	6.79	128	0	30
		4/14/08	13.9	7.09	1,237	6.38	118	0.02	–
MW1D	63-88	10/22/03	14.9	6.87	2,620	–	25	–	–
		6/2/04	13.9	6.87	2,460	–	–	–	–
		9/13/05	15.5	6.56	2,470	–	–	–	–
		3/19/06	12.9	6.95	2,460	5.11	230	0	–
		9/20/06	12.5	6.93	2,690	–	–	–	–
		3/21/07	15.3	6.39	2,540	0.08	12	0.39	40
		10/1/07	16.3	6.60	2,230	6.79	5	0.44	45
		4/14/08	14.6	6.99	2,637	0.50	32	0.73	–
.0MW2S	13-53	10/22/03	16.2	6.86	875	–	20	–	–
		6/2/04	16.9	7.07	861	–	–	–	–
		9/14/05	15.2	6.94	801	7.85	142	–	65
		3/21/06	13.0	7.07	863	9.40	262	0.14	25
		9/18/06	13.6	6.99	844	6.81	69	0	80
		3/22/07	15.2	6.40	790	5.82	69	0	30
		10/3/07	16.8	6.97	703	6.70	269	0.01	30
		4/15/08	11.7	7.23	742	3.22	75	0	–
MW3S	18-48	10/23/03	16.8	7.23	655	–	6	–	–
		6/2/04	14.2	7.23	664	–	–	–	–
		9/13/05	14.6	7.13	663	8.82	223	0	100
		3/23/06	8.9	7.16	662	6.74	269	0.08	25
		9/20/06	12.9	7.15	669	7.64	105	0	–
		3/22/07	15.0	6.44	578	5.90	261	0.17	30
		10/3/07	15.3	6.97	594	0.38	282	0	20
		4/14/08	13.7	7.17	693	3.52	165	0	–
MW4S	17-47	10/21/03	–	7.17	758	–	–	–	–
		6/4/04	15.4	6.93	769	–	–	–	–
		9/14/05	15.4	7.30	751	8.00	174	0	50
		3/21/06	6.7	7.25	729	10.90	154	0	25
		9/18/06	13.1	7.25	728	8.05	41	0	50
		3/22/07	14.2	6.53	765	5.91	78	0.10	25
		10/3/07	16.4	6.95	715	7.40	281	0.10	30
		1/11/08	11.3	7.56	757	–	–	–	–
		4/14/08	13.1	7.28	783	3.80	213	0	–
MW5S	15-55	10/22/03	15.3	7.10	816	–	6	–	–
		6/2/04	14.3	7.21	817	–	–	–	–
		9/13/05	16.0	7.04	763	13.90	228	0	60
		3/22/06	13.9	7.25	781	4.52	234	0.06	35
		9/20/06	13.9	7.19	787	5.82	73	0	35
		3/22/07	15.5	6.50	436	3.98	159	0.08	30
		10/3/07	16.5	7.18	850	1.87	268	0.04	25
		4/14/08	14.1	6.90	1,008	3.73	142	0.02	–

TABLE 3.3 (Cont.)

Location	Screen Interval (ft BGL)	Sample Date	Temperature (°C)	pH	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	ORP (mV)	Iron(II) (mg/L)	Carbon Dioxide (mg/L)
MW6S	10-25	6/3/04	15.1	6.89	2,410	–	–	–	–
		9/14/05	14.1	7.06	2,350	0.01	54	0	60
		3/20/06	9.8	6.91	2,360	1.37	89	0.38	60
		9/18/06	12.5	6.96	2,410	0.08	-29	0.35	85
		3/21/07	18.0	6.34	2,450	0.12	75	0.78	40
		10/2/07	17.1	7.33	2,280	0.20	61	0.19	35
		4/15/08	8.7	6.99	2,485	0.31	-76	0.41	–
MW7S	20-45	6/3/04	13.8	7.19	763	–	–	–	–
		9/12/05	15.0	7.26	760	8.35	240	0	50
		3/22/06	15.2	7.32	740	5.52	268	0.03	25
		9/19/06	13.2	7.15	764	7.37	114	0	25
		3/20/07	14.6	6.43	750	5.31	95	0	30
		10/1/07	15.6	6.99	725	7.76	269	0.01	35
		4/14/08	13.4	7.21	811	2.50	276	0	–
MW8S	10-25	6/3/04	12.8	7.12	941	–	–	–	–
		9/14/05	14.1	7.30	853	0.02	65	0	40
		3/20/06	12.5	7.04	954	0.90	153	0.05	30
		9/19/06	11.8	7.09	903	0.58	284	0.13	50
		3/20/07	11.0	6.52	1,026	0.77	76	0	30
		10/2/07	15.2	6.76	607	2.66	209	0.02	25
		4/15/08	10.2	7.27	1,067	1.58	170	0	–
MW9S	38.83-53.83	3/22/06	14.6	7.17	715	0.41	25	0	35
		9/19/06	13.0	7.08	707	0.10	113	0	55
		3/20/07	14.2	6.39	714	0.21	40	0	20
		10/1/07	15.5	7.05	664	5.50	191	0	30
		4/14/08	12.6	7.33	709	1.93	266	0.07	–
MW10S	30-45	3/21/06	6.3	7.11	701	2.10	88	0.01	40
		9/18/06	14.3	7.17	701	0.04	24	0.08	60
		3/21/07	14.5	6.51	720	0.88	11	0	30
		10/1/07	16.3	6.97	664	0.35	248	0.04	35
		4/14/08	16.0	7.25	723	1.25	181	0	–
MW11S	53-68	3/22/06	14.8	7.33	762	9.40	237	0.06	30
		9/19/06	13.0	7.24	764	1.42	158	0.02	30
		3/20/07	14.6	6.33	782	3.90	76	0	30
		10/1/07	16.4	6.49	624	6.57	241	0.04	35
		4/15/08	13.9	7.30	785	6.14	152	0	–
Isch	–	2/19/04	–	–	–	–	–	–	–
		9/14/05	20.4	6.73	2,300	–	–	–	–
		3/23/06	13.0	7.23	9,400	–	–	–	–
		9/19/06	–	–	–	–	–	–	–
		3/22/07	–	–	–	–	–	–	–
		10/3/07	–	–	–	–	–	–	–
		4/15/08	12.6	7.33	3,160	–	–	0.28	–

TABLE 3.3 (Cont.)

Location	Screen Interval (ft BGL)	Sample Date	Temperature (°C)	pH	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	ORP (mV)	Iron(II) (mg/L)	Carbon Dioxide (mg/L)
Rillinger	–	6/4/04	15.9	6.99	2,450	–	–	–	–
		9/14/05	–	–	–	–	–	–	–
		3/19/06	11.9	7.05	2,550	–	–	–	–
		9/19/06	–	–	–	–	–	–	–
		3/29/07	–	–	–	–	–	–	–
		10/3/07	–	–	–	–	–	–	–
		1/11/08	12.2	7.46	884	–	–	–	–
		4/15/08	12.0	7.56	868	–	–	0	–
Stone	43[b]	6/4/04	17.1	7.35	682	–	–	–	–
		9/14/05	17.3	6.81	638	–	–	–	–
		3/19/06	12.9	6.42	650	–	213	0	–
		9/19/06	16.7	7.12	639	–	–	–	–
		3/22/07	16.7	6.58	679	4.71	19	0.28	35
		10/3/07	16.1	6.97	564	7.07	225	0.07	25
		4/15/08	11.3	7.45	557	–	–	0	–
Follow-up sampling to the April 2008 monitoring event to confirm the status of the contaminant plume									
MW11S	53-68	4/22/08	15.1	7.25	790	6.22	162	–	–
MW1S	11-51	4/22/08	15.6	6.96	1,230	6.10	133	–	–
MW3S	18-48	4/22/08	16.0	6.99	685	6.71	155	–	–
MW5S	15-55	4/23/08	14.9	6.88	1,009	3.27	184	–	–
MW7S	20-45	4/23/08	14.0	7.00	822	7.41	191	–	–
Sampling of MW1S with the bladder pump intake positioned at 22, 27, and 48 ft BGL									
MW1S	11-51	5/1/08	17.1	7.11	801	3.34	104	–	–
		5/1/08	17.0	7.10	820	3.40	102	–	–
		5/1/08	16.3	7.00	1,301	3.03	118	–	–
Sampling of MW3S with the bladder pump intake positioned at 26, 38, and 45 ft BGL									
MW3S	18-48	5/1/08	13.2	7.17	675	3.83	161	–	–
		5/1/08	12.7	7.12	671	4.21	193	–	–
		5/1/08	12.6	7.03	675	4.57	205	–	–
Sampling of MW5S with the bladder pump intake positioned at 20, 28, and 52 ft BGL									
MW5S	15-55	5/1/08	15.2	6.92	1,014	2.99	126	–	–
		5/1/08	15.1	6.90	997	2.38	124	–	–
		5/1/08	15.1	6.89	989	2.06	128	–	–

[a] Not measured.

[b] Total depth.

TABLE 3.4 Results of analyses at the AGEM Laboratory for volatile organic compounds in surface water and sediment samples collected at Morrill, March 2007 to April 2008.[a]

				Concentration (µg/L in water; µg/kg in sediment)			
Location	Sample	Sample Date	Medium	Carbon Tetrachloride	Chloroform	Methylene Chloride	Quantitation Limit
SM1	MRSM1-W-16572	3/22/07	Water	ND[b]	ND	ND	1.0
SM1	MRSM1-S-16573	3/22/07	Sediment	ND	ND	ND	10
SM1	MRSM1-W-16583	10/8/07	Water	ND	ND	ND	1.0
SM1	MRSM1-S-16584	10/8/07	Sediment	ND	ND	ND	10
SM1	MRSM1-W-23254	4/14/08	Water	ND	ND	ND	1.0
SM1	MRSM1-S-23254	4/14/08	Sediment	ND	ND	ND	10
SM2	MRSM2-W-16574	3/22/07	Water	ND	ND	ND	1.0
SM2	MRSM2-S-16575	3/22/07	Sediment	ND	ND	ND	10
SM2	MRSM2-W-16585	10/8/07	Water	ND	ND	ND	1.0
SM2	MRSM2-S-16586	10/8/07	Sediment	ND	ND	ND	10
SM2	MRSM2-W-23255	4/14/08	Water	ND	ND	ND	1.0
SM2	MRSM2-S-23255	4/14/08	Sediment	ND	ND	ND	10
SM3	MRSM3-W-16576	3/22/07	Water	ND	ND	ND	1.0
SM3	MRSM3-S-16577	3/22/07	Sediment	ND	ND	ND	10
SM3	MRSM3-W-16587	10/8/07	Water	ND	ND	ND	1.0
SM3	MRSM3-S-16588	10/8/07	Sediment	ND	ND	ND	10
SM3	MRSM3-W-23256	4/14/08	Water	ND	ND	ND	1.0
SM3	MRSM3-S-23256	4/14/08	Sediment	ND	ND	ND	10
SM4	MRSM4-W-16578	3/22/07	Water	ND	ND	ND	1.0
SM4	MRSM4-S-16579	3/22/07	Sediment	ND	ND	ND	10
SM4	MRSM4-W-16589	10/8/07	Water	ND	ND	ND	1.0
SM4	MRSM4-S-16590	10/8/07	Sediment	ND	ND	ND	10
SM4	MRSM4-W-23257	4/14/08	Water	ND	ND	ND	1.0
SM4	MRSM4-S-23257	4/14/08	Sediment	ND	ND	ND	10
SMB	MRSMB-W-16570	3/22/07	Water	ND	ND	ND	1.0
SMB	MRSMB-S-16571	3/22/07	Sediment	ND	ND	ND	10
SMB	MRSMB-W-16581	10/8/07	Water	ND	ND	ND	1.0
SMB	MRSMB-S-16582	10/8/07	Sediment	ND	ND	ND	10
SMB	MRSMB-W-23258	4/14/08	Water	ND	ND	ND	1.0
SMB	MRSMB-S-23258	4/14/08	Sediment	ND	ND	ND	10

[a] Analyses conducted at the AGEM Laboratory, Argonne, Illinois, with EPA Method 524.2 for surface water samples or modified EPA Method 5030B/8260B for sediment samples.

[b] ND, not detected at the instrument detection limit of 0.1 µg/L for surface water samples or 1.0 µg/kg for sediment samples.

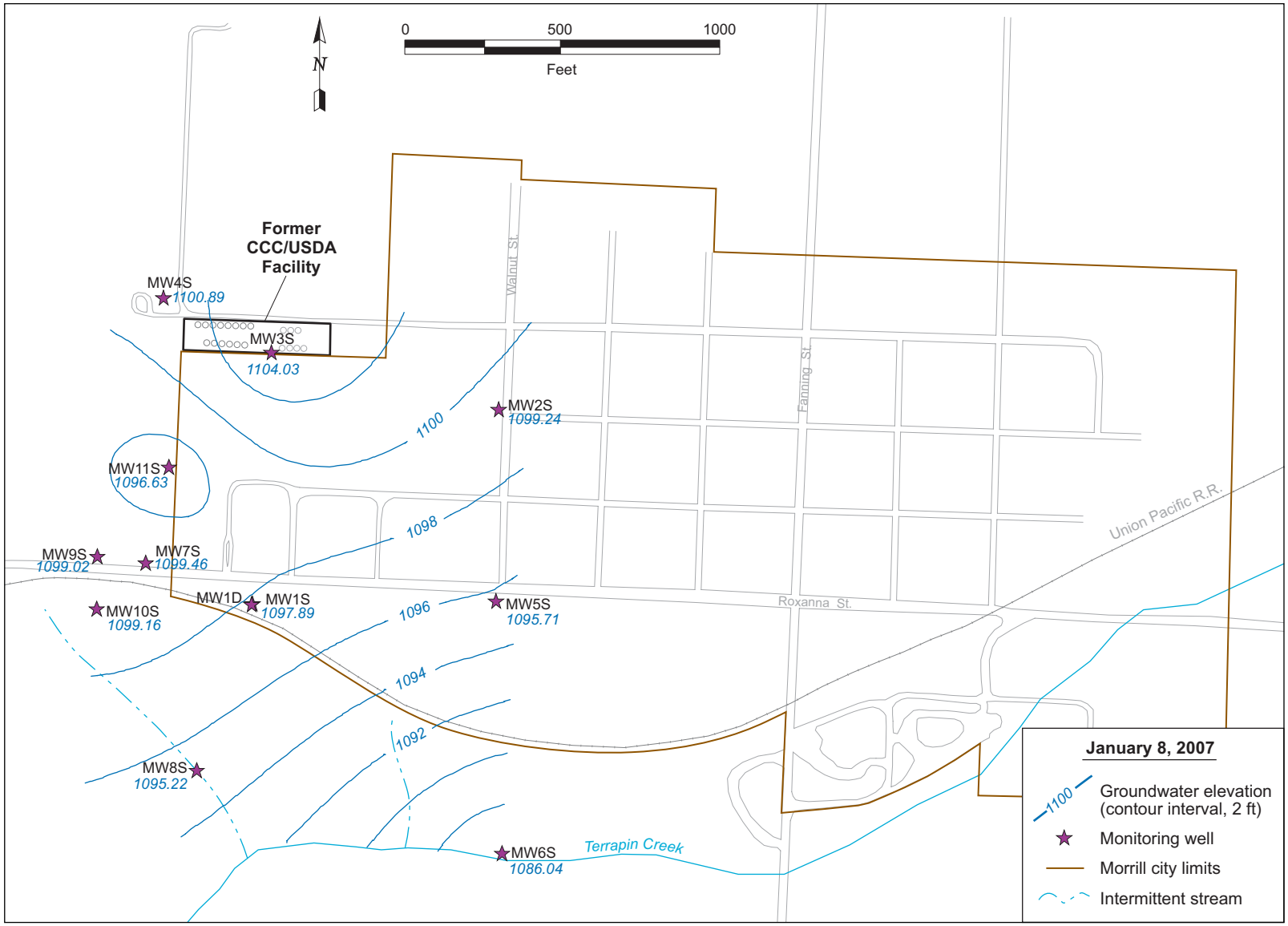

FIGURE 3.1a Potentiometric surface at Morrill, based on water levels measured manually on January 8, 2007.

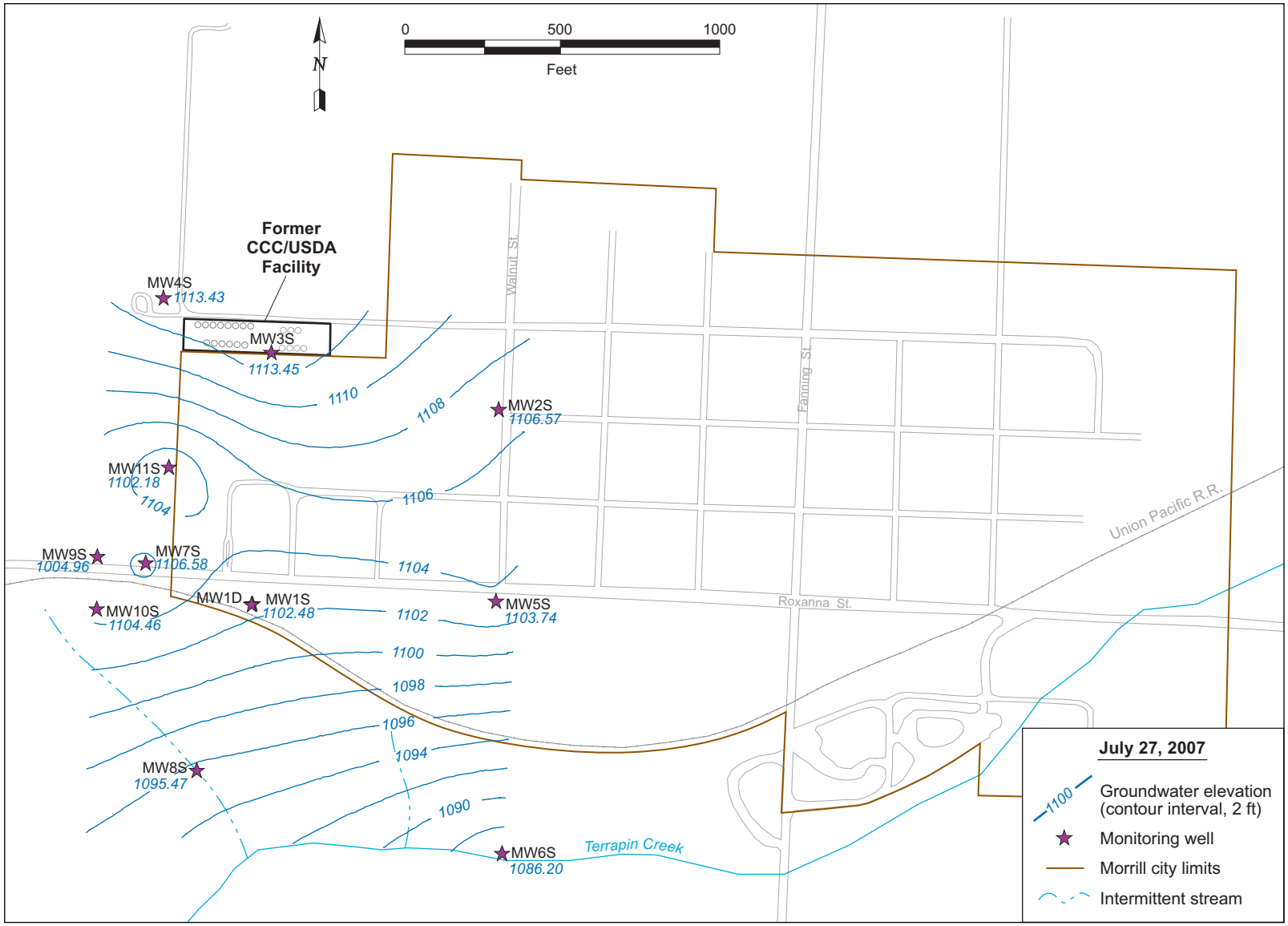

FIGURE 3.1b Potentiometric surface at Morrill, based on water levels measured manually on July 27, 2007.

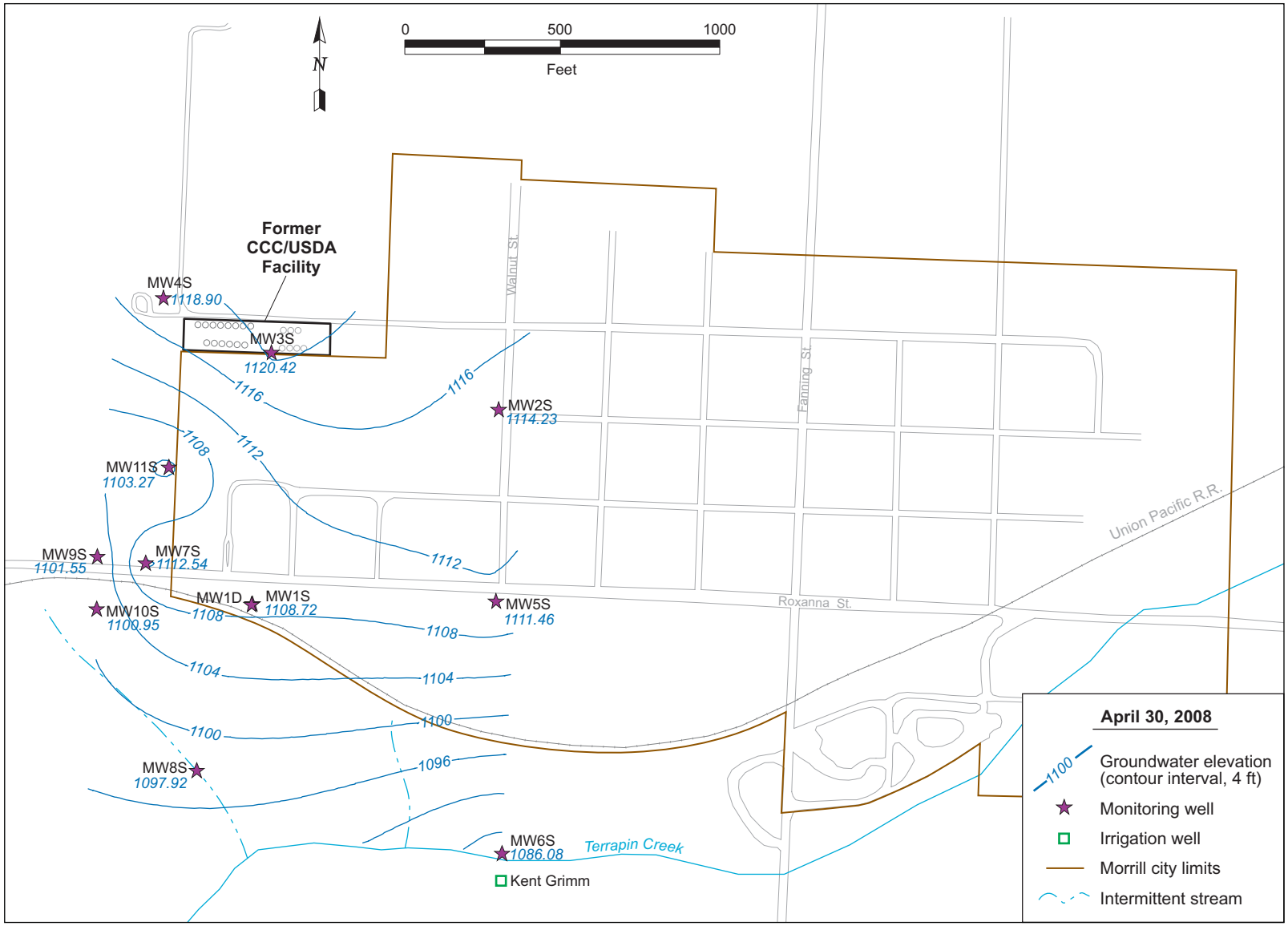

FIGURE 3.1c Potentiometric surface at Morrill, based on water levels measured manually on April 30, 2008.

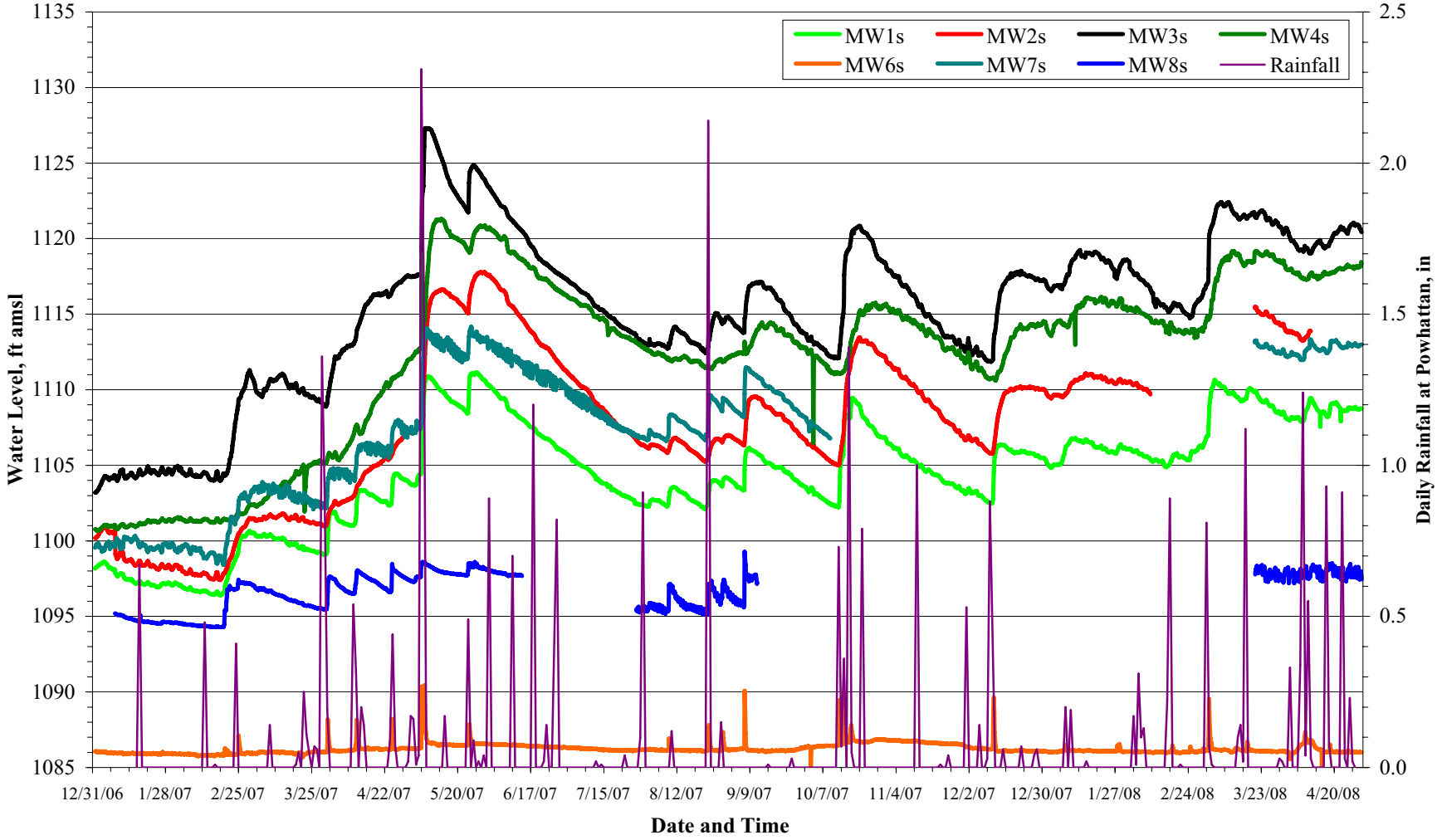

FIGURE 3.2 Hydrographs summarizing results of long-term water level monitoring in wells MW1S-MW4S and MW6S-MW8S at Morrill, from January 1, 2007, to April 30, 2008.

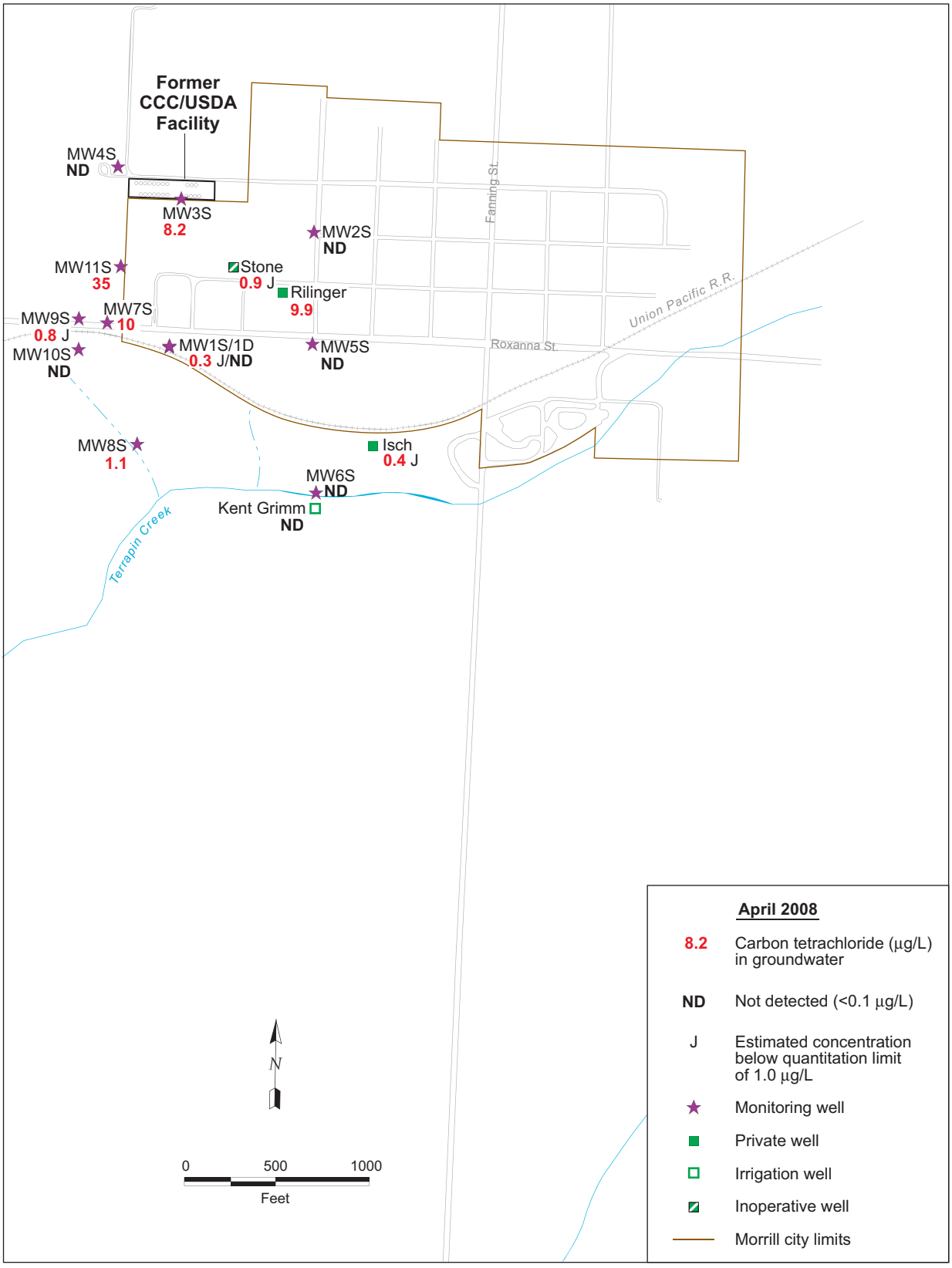

FIGURE 3.3 Carbon tetrachloride concentrations in groundwater at Morrill, April 2008.

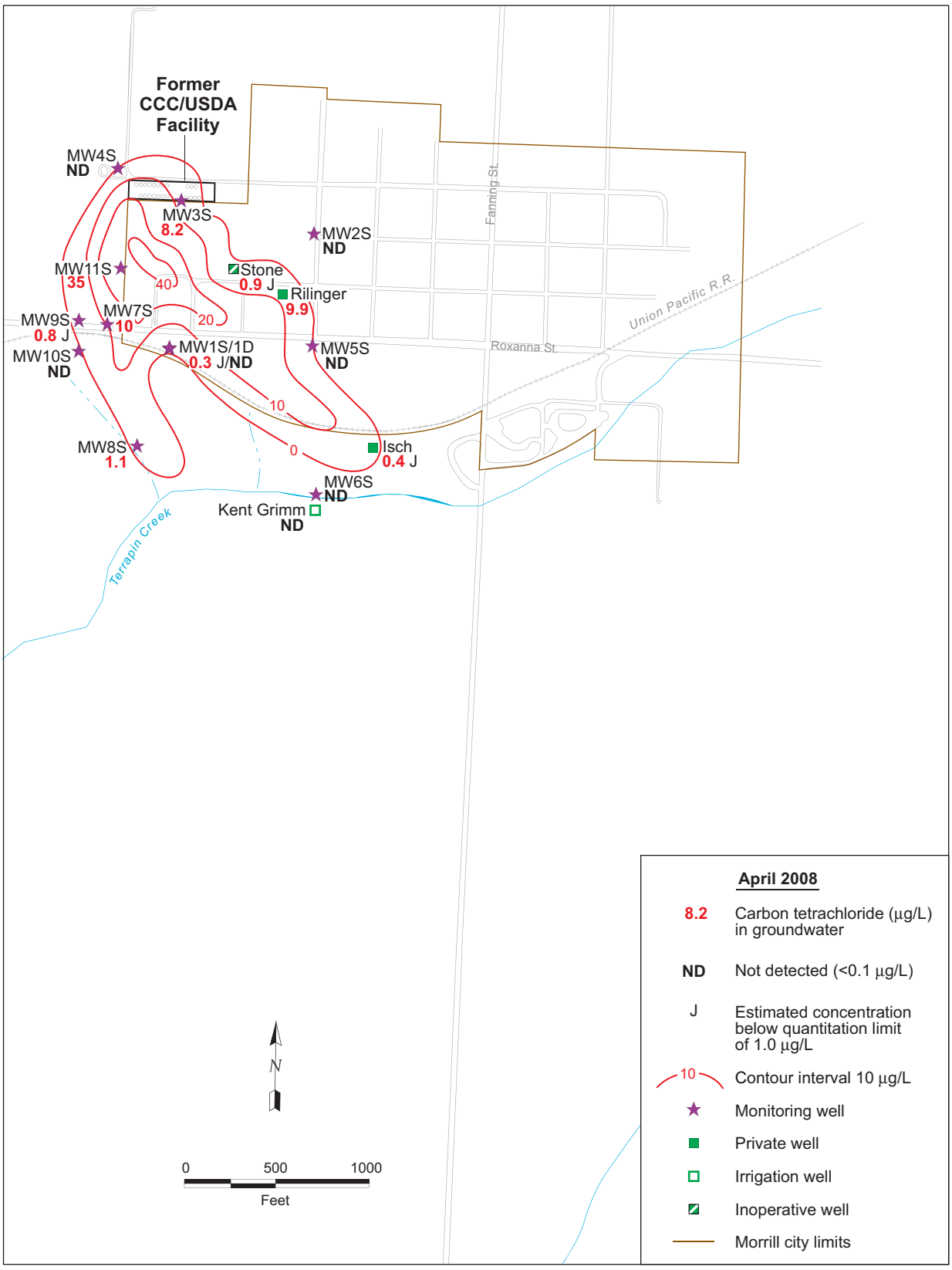

FIGURE 3.4 Lateral extent of the carbon tetrachloride contamination in groundwater at Morrill, as interpreted on the basis of sampling and analysis in April 2008.

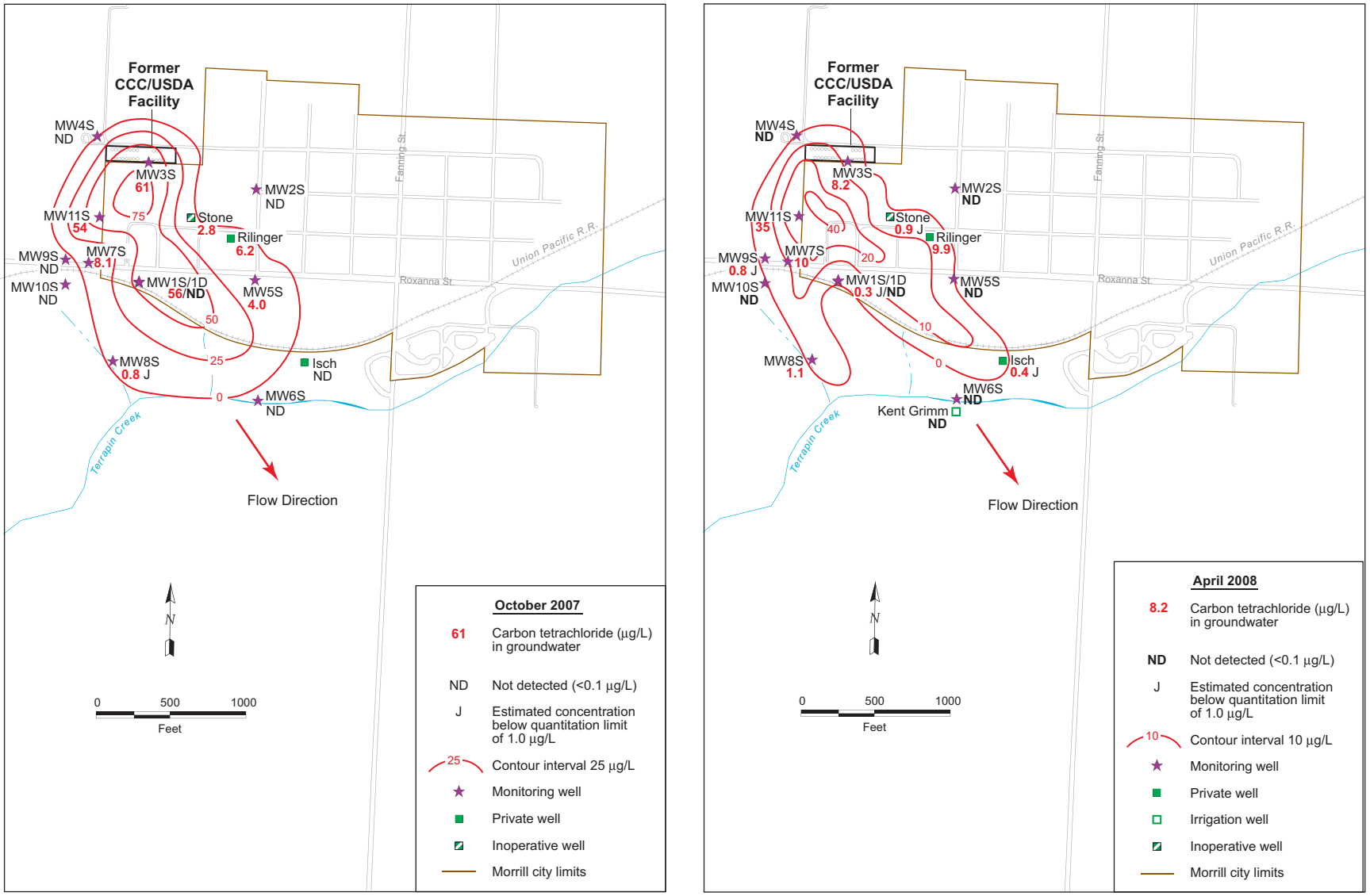

FIGURE 3.5 Lateral extent of the carbon tetrachloride contamination in groundwater at Morrill, as interpreted on the basis of sampling and analysis in October 2007 (left) and April 2008 (right).

4 Conclusions, Issues, and Ongoing Work

4.1 Conclusions

The findings of the April 2008 monitoring event at Morrill support the following conclusions:

- Measurements of groundwater levels, made both manually and through the use of automatic recorders, in 2003-2007, consistently indicated an apparent direction of groundwater flow to the south-southeast from the former CCC/USDA facility. Measurements in April 2008 suggested a potential shift in the groundwater flow direction toward the west. Continued monitoring is necessary to clarify this observation.

- In sampling events in 2003-2007, contaminant concentrations had been generally consistent. In the April 2008 sampling event, carbon tetrachloride concentrations at three locations decreased significantly, from 56 µg/L to < 1 µg/L at MW1S, from 61 µg/L to 8.2 µg/L at MW3S, and from 4.0 µg/L to not detected at MW5S.

- No carbon tetrachloride contamination was detected in surface waters or shallow stream bed sediments sampled (at the request of the KDHE) at five locations along Terrapin Creek, downgradient of the former CCC/USDA facility.

4.2 Issues and Ongoing Work

The following issues and recommendations merit consideration in planning for ongoing work at Morrill:

- The significant changes in carbon tetrachloride concentrations and the plume configuration observed in the April 2008 sampling were confirmed with repeated sampling. The only known concurrent change in the hydrogeologic system at Morrill was the installation, in March 2008, of a new, high-capacity

irrigation well on the south side of Terrapin Creek. Further monitoring will be required, and is imperative, in order to fully characterize the well's effects on the hydrogeologic system. Nevertheless, a reasonable preliminary assumption is that the well is influencing the downgradient plume as it moves toward Terrapin Creek.

- Sampling will continue at the frequency previously established under the approved monitoring plan (Argonne 2005b). Sampling events will include groundwater sampling from the existing network of 12 monitoring wells and 3 private wells, as well as sampling of surface waters and stream bed sediments at the 5 established locations along Terrapin Creek.

- Tree sampling is scheduled for mid July 2008. Severe ice storms in the Morrill area during winter 2007-2008 destroyed many trees designated for sampling as part of the continuing baseline study. The health of the remaining baseline trees will be evaluated during the 2008 growing season, as will their reliability for the detection of VOCs. Alternate trees will be selected as necessary to reestablish the baseline sampling set.

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Monitoring at Morrill, Kansas, in September 2005 and March 2006, with Expansion of the Monitoring Network in January 2006, January 5.

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Appendix A:

Documentation for the Grimm Irrigation Well


S25-T1S-R15E
S26-T1S-R15E
S35-T1S-R15E
S36-T1S-R15E
MAIN
VIRGINIA ST
FANNING ST
ROXANNA ST
RACINE ST
DOWNING ST
WALNUT ST
MIAMI ST
MW2S
MW5S
MW6S
MW1S
MW1D
MW8S
MW11S
MW7S
MW9S
MW10S
Kent Grimm
Lowell Snyder/
Avis Miller
NE 1/4 of NE 1/4
0
300
600
feet
N
Morrill, Kansas
2006 NAIP aerial photo

WATER WELL RECORD **Form WWC-5** Division of Water Resources; App. No. 46934

LOCATION OF WATER WELL: County: BROWN | Fraction: SE ¼ SE ¼ NE ¼ | Section Number: 35 | Township Number: T 1 S | Range Number: R 15 E W

Distance and direction from nearest town or city street address of well if located within city? SOUTH OF MORRILL

Global Positioning Systems (decimal degrees, min. of 4 digits)
Latitude:
Longitude:
Elevation:
Datum:
Data Collection Method:

WATER WELL OWNER: KENT GRIMM
RR#, St. Address, Box # : 2844 DEWBERRY RD
City, State, ZIP Code : MORRILL, KS 66515

LOCATE WELL'S LOCATION WITH AN "X" IN SECTION BOX: N / W / E / S — NW, NE, SW, SE; X in NE

4 DEPTH OF COMPLETED WELL 67 ft.

Depth(s) Groundwater Encountered (1) 26 ft. (2) — ft. (3) — ft.
WELL'S STATIC WATER LEVEL 0.4 (design) 450 gpm ft. ~~below land surface~~ measured on mo/day/yr. 3/10/08
Pump test data: Well water was 30 ft. after — hours pumping 900 gpm
Est. Yield 850 gpm: Well water was 28 ft. after 10 hours pumping 800 gpm

WELL WATER TO BE USED AS: 5 Public water supply 8 Air conditioning 11 Injection well
1 Domestic 3 Feedlot 6 Oil field water supply 9 Dewatering 12 Other (Specify below)
(2 Irrigation) 4 Industrial 7 Domestic (lawn & garden) 10 Monitoring well

Was a chemical/bacteriological sample submitted to Department? Yes ..... No X; If yes, mo/day/yrs Sample was submitted..... Water well disinfected? Yes X No .....

TYPE OF CASING USED: 5 Wrought Iron 8 Concrete tile CASING JOINTS: Glued X Clamped
1 Steel 3 RMP (SR) 6 Asbestos-Cement 9 Other (specify below) Welded
(2 PVC) 4 ABS 7 Fiberglass Threaded

Blank casing diameter 16 in. to 27 ft., Diameter — in. to — ft., Diameter — in. to — ft.
Casing height above land surface 36 in., Weight — lbs./ft. Wall thickness or guage No. SCH 40

TYPE OF SCREEN OR PERFORATION MATERIAL:
1 Steel 3 Stainless Steel 5 Fiberglass (7 PVC) 9 ABS 11 Other (Specify)
2 Brass 4 Galvanized Steal 6 Concrete tile 8 RM (SR) 10 Asbestos-Cement 12 None used (open hole)

SCREEN OR PERFORATION OPENINGS ARE:
1 Continuous slot (3 Mill slot) 1085 5 Gauzed wrapped 7 Torch cut 9 Drilled holes 11 None (open hole)
2 Louvered shutter 4 Key punched 6 Wire wrapped 8 Saw Cut 10 Other (specify)

SCREEN-PERFORATED INTERVALS: From 27 ft. to 67 ft., From — ft. to — ft.
From — ft. to — ft., From — ft. to — ft.
GRAVEL PACK INTERVALS: From — ft. to — ft., From — ft. to — ft.
From — ft. to — ft., From — ft. to — ft.

GROUT MATERIAL: (1 Neat cement) 2 Cement grout (3 Bentonite) 4 Other
Grout Intervals: 3 From 0 ft. to 5 ft., From 5 ft. to 10 ft., From 10 ft. to 25 ft.
What is the nearest source of possible contamination:
1 Septic tank 4 Lateral lines 7 Pit privy 10 Livestock pens 13 Insecticide Storage (16 Other (specify below))
2 Sewer lines 5 Cess pool 8 Sewage lagoon 11 Fuel storage 14 Abandoned water well
3 Watertight sewer lines 6 Seepage pit 9 Feedyard 12 Fertilizer Storage 15 Oil well/gas well
Direction from well? NORTH How many feet? ~200 FEET CREEK

FROM	TO	LITHOLOGIC LOG	FROM	TO	PLUGGING INTERVALS
0	21	CLAY			
21	26	SHALE, GRAY			
26	31	SHALE, PLATY, DARK GRAY H2O			
31	37	SHALE, GRAY			
37	59	SHALE, PLATY, COBBLES 2-6 INCHES			
59	63	SHALE, GRAY, HARD			
63	67	w/ GYPSUM			

CONTRACTOR'S OR LANDOWNER'S CERTIFICATION: This water well was (1) constructed, (2) reconstructed, or (3) plugged under my jurisdiction and was completed on (mo/day/year) 3/10/08 and this record is true to the best of my knowledge and belief. Kansas Water Well Contractor's License No. 760 This Water Well Record was completed on (mo/day/year) 4/1/08 under the business name of ASSOCIATED DRILLING INC. by (signature)

INSTRUCTIONS: Use typewriter or ball point pen. *PLEASE PRESS FIRMLY* and *PRINT* clearly. Please fill in blanks, underline or circle the correct answers. Send top three copies to Kansas Department of Health and Environment, Bureau of Water, Geology Section, 1000 SW Jackson St., Suite 420, Topeka, Kansas 66612-1367. Telephone 785-296-5522. Send one to WATER WELL OWNER and retain one for your records. Fee of $5.00 for each constructed well. Visit us at http://www.kdheks.gov/waterwell/index.html.

KSA 82a-1212

Appendix B:

Sequence of Sampling Activities at Morrill, Kansas, in April-May 2008

TABLE B.1 Sequence of sampling activities at Morrill in April-May 2008.

Sample Date	Time	Location	Sample	Medium	Depth (ft TOC)	Chain of Custody No.	Description
04/14/08	11:53	MW4S	MRMW4S-W-23234	Water	17-47	4783	Depth to water from top of casing (TOC) = 26.32 ft. Depth of 4-in. well = 47.85 ft TOC. Sample collected by using low-flow bladder pump after purging of 2.48 L. Purge water clear.
04/14/08	13:29	MW3S	MRMW3S-W-23233	Water	18-48	4783	Depth to water = 16.95 ft TOC. Depth of 4-in. well = 47.80 ft TOC. Sample collected by using low-flow bladder pump after purging of 3.31 L. Purge water clear.
04/14/08	13:31	MW3S	MRMW3S-W-23246	Water	18-48	4783	Replicate of sample MRMW3S-W-23233.
04/14/08	13:40	QC	MRQCIR-W-23252	Water	–-	4783	Rinsate of decontaminated bladder hose after collection of sample MRMW3S-W-23233 and replicate MRMW3S-W-23246.
04/14/08	14:42	SMB	MRSMB-S-23258	Soil	–-	4782	Sediment sample from Terrapin Creek.
04/14/08	14:43	SMB	MRSMB-W-23258	Water	–-	4784	Water sample from Terrapin Creek.
04/14/08	14:51	SM1	MRSM1-S-23254	Soil	–-	4782	Sediment sample from Terrapin Creek.
04/14/08	14:52	SM1	MRSM1-W-23254	Water	–-	4784	Water sample from Terrapin Creek.
04/14/08	14:57	SM2	MRSM2-S-23255	Soil	–-	4782	Sediment sample from Terrapin Creek.
04/14/08	14:58	SM2	MRSM2-W-23255	Water	–-	4784	Water sample from Terrapin Creek.
04/14/08	15:03	SM3	MRSM3-S-23256	Soil	–-	4782	Sediment sample from Terrapin Creek.
04/14/08	15:04	SM3	MRSM3-W-23256	Water	–-	4784	Water sample from Terrapin Creek.
04/14/08	15:14	SM4	MRSM4-S-23257	Soil	–-	4782	Sediment sample from Terrapin Creek.
04/14/08	15:15	SM4	MRSM4-W-23257	Water	–-	4784	Water sample from Terrapin Creek.
04/14/08	16:34	MW1D	MRMW1D-W-23231	Water	63-88	4783	Depth to water = 29.51 ft TOC. Depth of 4-in. well = 89.00 ft TOC. Sample collected by using low-flow bladder pump after purging of 6 L. Purge water clear. Iron sample light orange.
04/14/08	16:41	MW10S	MRMW10S-W-23240	Water	30-45	4783	Depth to water = 9.82 ft TOC. Depth of 2-in. well = 49.70 ft TOC. Sample collected by using low-flow bladder pump after purging of 1.90 L. Purge water tan color.
04/14/08	17:12	MW1S	MRMW1S-W-23230	Water	11-51	4783	Depth to water = 16.20 ft TOC. Depth of 4-in. well = 54.00 ft TOC. Sample collected by using low-flow bladder pump after purging of 5.5 L. Purge water clear.
04/14/08	17:14	MW1S	MRMW1S-W-23245	Water	11-51	4783	Replicate of sample MRMW1S-W-23230.
04/14/08	17:34	QC	MRQCIR-W-23251	Water	–-	4783	Rinsate of decontaminated bladder hose after collection of sample MRMW1S-W-23230 and replicate MRMW1S-W-23245.
04/14/08	18:15	MW7S	MRMW7S-W-23237	Water	20-45	4783	Depth to water = 7.72 ft TOC. Depth of 4-in. well = 47.00 ft TOC. Sample collected by using low-flow bladder pump after purging of 1.82 L. Purge water clear.
04/14/08	18:16	MW5S	MRMW5S-W-23235	Water	15-55	4783	Depth to water = 11.20 ft TOC. Depth of 4-in. well = 54.60 ft TOC. Sample collected by using low-flow bladder pump after purging of 6 L. Purge water clear.
04/14/08	18:17	MW7S	MRMW7S-W-23247	Water	20-45	4783	Replicate of sample MRMW7S-W-23237.

TABLE B.1 (Cont.)

Sample Date	Time	Location	Sample	Medium	Depth (ft TOC)	Chain of Custody No.	Description
04/14/08	18:22	QC	MRQCIR-W-23253	Water	–-	4783	Rinsate of decontaminated bladder hose after collection of sample MRMW7S-W-23237 and replicate MRMW7S-W-23247.
04/14/08	19:24	MW9S	MRMW9S-W-23239	Water	38.83-53.83	4783	Depth to water = 16.58 ft TOC. Depth of 2-in. well = 58.63 ft TOC. Sample collected by using low-flow bladder pump after purging of 2.29 L. Purge water dirty looking.
04/15/08	7:56	MW6S	MRMW6S-W-23236	Water	10-25	4784	Depth to water = 5.15 ft TOC. Depth of 4-in. well = 26.90 ft TOC. Sample collected by using low-flow bladder pump after purging of 2.5 L. Purge water clear. Iron sample light orange color.
04/15/08	9:14	MW8S	MRMW8S-W-23238	Water	10-25	4784	Depth to water = 0.70 ft TOC. Depth of 4-in. well = 26.80 ft TOC. Sample collected by using low-flow bladder pump after purging of 5.5 L. Purge water clear.
04/15/08	9:32	MW2S	MRMW2S-W-23232	Water	13-53	4784	Depth to water = 23.55 ft TOC. Depth of 4-in. well = 53.40 ft TOC. Sample collected by using low-flow bladder pump after purging of 2.22 L. Purge water clear.
04/15/08	10:28	MW11S	MRMW11S-W-23241	Water	53-68	4784	Depth to water = 29.90 ft TOC. Depth of 2-in. well = 72.70 ft TOC. Sample collected by using low-flow bladder pump after purging of 5.5 L. Purge water clear.
04/15/08	11:30	QC	MRQCTB-W-23248	Water	–-	4784	Trip blank sent to the AGEM Laboratory for organic analyses with water samples listed on COCs 4783 and 4784, as well as to Envirosystems for verification organic analysis with samples listed on chain-of-custody (COC) form 4785.
04/15/08	11:52	Isch	MRISCH-W-23242	Water	–-	4784	Isch well at co-op. Purge water clear. Co-op personnel turned pump on to purge and sample.
04/15/08	12:08	Rilinger	MRRILINGER-W-23243	Water	–-	4784	Rilinger well. Purge water clear. Turned well on for five minutes, then sampled.
04/15/08	12:16	Stone	MRSTONE-W-23244	Water	43	4784	Stone well. Purge water clear. Water level tape hit bottom at 38.86 ft TOC and became caught on obstruction when removed. Bladder pump hit bottom at 32.84 ft TOC. Sample collected by using bailer.
04/22/08	10:20	TD12	MRTD12-W-23264	Water	–-	4786	Sample from Grimm irrigation well discharge for organic analyses at the AGEM Laboratory.
04/22/08	11:16	Isch	MRISCH-W-23262	Water	–-	4786	Resampling to confirm apparent effect of Grimm irrigation well on plume contamination.
04/22/08	11:40	QC	MRQCTB-W-23263	Water	–-	4786	Trip blank sent to the AGEM Laboratory for organic analyses with water samples listed on COC 4786, as well as to Envirosystems for verification organic analysis with samples listed on COC 4787.

TABLE B.1 (Cont.)

Sample Date	Time	Location	Sample	Medium	Depth (ft TOC)	Chain of Custody No.	Description
04/22/08	12:52	MW1S	MRMW1S-W-23259	Water	11-51	4786	Resampling to confirm apparent effect of Grimm irrigation well on plume contamination. Depth to water = 16.00 ft TOC. Depth of 4-in. well = 54.00 ft TOC. Sample collected by using low-flow bladder pump after purging of 6.25 L. Purge water clear.
04/22/08	13:46	MW3S	MRMW3S-W-23260	Water	18-48	4786	Resampling to confirm apparent effect of Grimm irrigation well on plume contamination. Depth to water = 15.80 ft TOC. Depth of 4-in. well = 47.80 ft TOC. Sample collected by using low-flow bladder pump after purging of 6.5 L. Purge water clear.
04/22/08	15:08	MW11S	MRMW11S-W-23261	Water	53-68	4786	Resampling to confirm apparent effect of Grimm irrigation well on plume contamination. Depth to water = 30.20 ft TOC. Depth of 2-in. well = 72.70 ft TOC. Sample collected by using low-flow bladder pump after purging of 7.2 L. Purge water cloudy to clear.
04/23/08	16:46	MW7S	MRMW7S-W-23265	Water	20-45	4789	Resampling to confirm apparent effect of Grimm irrigation well on plume contamination. Depth to water = 7.80 ft TOC. Depth of 4-in. well = 47.00 ft TOC. Sample collected by using low-flow bladder pump after purging of 11 L. Purge water cloudy to clear.
04/23/08	17:50	MW5S	MRMW5S-W-23266	Water	15-55	4789	Resampling to confirm apparent effect of Grimm irrigation well on plume contamination. Depth to water = 11.30 ft TOC. Depth of 4-in. well = 54.60 ft TOC. Sample collected by using low-flow bladder pump after purging of 6.5 L.
04/23/08	18:30	TD12	MRTD12-W-23267	Water	–-	4792	Sample collected from Grimm irrigation well discharge for anions, cations, and VOCs analyses by TestAmerica.
04/23/08	18:45	QC	MRQCTB-W-23268	Water	–-	4789	Trip blank sent to the AGEM Laboratory for organic analyses with water samples listed on COC 4789, as well as to Envirosystems for verification organic analysis with samples listed on COC 4790 and to TestAmerica for verification organic analysis with samples listed on COC 4792.
05/01/08	6:25	MW3S	MRMW3S-45-W-23271	Water	18-48	6060	Bladder pump intake at 45 ft TOC. Purge water clear. Sample collected after purging of 3.17 L.
05/01/08	6:59	MW3S	MRMW3S-38-W-23270	Water	18-48	6060	Bladder pump intake at 38 ft TOC. Purge water clear. Sample collected after purging of 2.75 L.
05/01/08	7:37	MW3S	MRMW3S-26-W-23269	Water	18-48	6060	Bladder pump intake at 26 ft TOC. Purge water clear. Sample collected after purging of 2.62 L.
05/01/08	9:00	MW5S	MRMW5S-52-W-23274	Water	15-55	6060	Bladder pump intake at 52 ft TOC. Purge water clear. Sample collected after purging of 4 L.

TABLE B.1 (Cont.)

Sample Date	Time	Location	Sample	Medium	Depth (ft TOC)	Chain of Custody No.	Description
05/01/08	9:36	MW5S	MRMW5S-28-W-23273	Water	15-55	6060	Bladder pump intake at 28 ft TOC. Purge water clear. Sample collected after purging of 3.4 L.
05/01/08	10:18	MW5S	MRMW5S-20-W-23272	Water	15-55	6060	Bladder pump intake at 20 ft TOC. Purge water clear. Sample collected after purging of 3.7 L.
05/01/08	11:34	MW1S	MRMW1S-48-W-23277	Water	11-51	6060	Bladder pump intake at 48 ft TOC. Purge water clear. Sample collected after purging of 4.25 L.
05/01/08	12:15	MW1S	MRMW1S-27-W-23276	Water	11-51	6060	Bladder pump intake at 27 ft TOC. Purge water clear. Sample collected after purging of 3.24 L.
05/01/08	12:53	MW1S	MRMW1S-22-W-23275	Water	11-51	6060	Bladder pump intake at 22 ft TOC. Purge water clear. Sample collected after purging of 3.24 L.
05/01/08	13:29	QC	MRQCTB-W-23278	Water	–-	6060	Trip blank sent to the AGEM Laboratory for organic analyses with water samples listed on COC 6060.

Appendix C:

Analytical Results for Waste Purge Water

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

May 27, 2008

Lisa Larsen
Larsen & Associates, Inc.
1311 E. 25th St.
Suite B
Lawrence, KS 66046

RE: Project: Morrill-ANL
Pace Project No.: 6040555

Dear Lisa Larsen:
Enclosed are the analytical results for sample(s) received by the laboratory on May 21, 2008. The results relate only to the samples included in this report. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Trudy Gipson

Trudy Gipson

trudy.gipson@pacelabs.com
Project Manager

A2LA Certification Number: 2456.01
Arkansas Certification Number: 05-008-0
Illinois Certification Number: 001191
Iowa Certification Number: 118
Kansas/NELAP Certification Number: E-10116
Louisiana Certification Number: 03055
Oklahoma Certification Number: 9205/9935
Utah Certification Number: 9135995665

Enclosures

cc: Nadine Appenbrink, Larsen & Associates, Inc. Mike Dinkel, Larsen & Associates, Inc.

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

cc: Brooke Evans, Larsen & Associates, Inc.

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: Morrill-ANL
Pace Project No.: 6040555

Lab ID	Sample ID	Matrix	Date Collected	Date Received
6040555001	PURGE WATER	Water	05/21/08 11:00	05/21/08 15:26
6040555002	TRIP BLANK	Water	05/21/08 00:00	05/21/08 15:26

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: Morrill-ANL
Pace Project No.: 6040555

Lab ID	Sample ID	Method	Analysts	Analytes Reported
6040555001	PURGE WATER	EPA 5030B/8260	JTK	70
		EPA 504.1	CDI	1
6040555002	TRIP BLANK	EPA 5030B/8260	JTK	70

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: Morrill-ANL
Pace Project No.: 6040555

Sample: PURGE WATER **Lab ID: 6040555001** Collected: 05/21/08 11:00 Received: 05/21/08 15:26 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
504 GCS EDB and DBCP	Analytical Method: EPA 504.1 Preparation Method: EPA 504.1							
1,2-Dibromoethane (EDB)	ND	ug/L	0.028	1	05/22/08 00:00	05/22/08 13:24	106-93-4	
8260 MSV	Analytical Method: EPA 5030B/8260							
Acetone	ND	ug/L	10.0	1		05/23/08 18:27	67-64-1	
Benzene	ND	ug/L	1.0	1		05/23/08 18:27	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		05/23/08 18:27	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		05/23/08 18:27	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		05/23/08 18:27	75-27-4	
Bromoform	ND	ug/L	1.0	1		05/23/08 18:27	75-25-2	
Bromomethane	ND	ug/L	1.0	1		05/23/08 18:27	74-83-9	
2-Butanone (MEK)	ND	ug/L	10.0	1		05/23/08 18:27	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		05/23/08 18:27	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		05/23/08 18:27	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		05/23/08 18:27	98-06-6	
Carbon disulfide	ND	ug/L	5.0	1		05/23/08 18:27	75-15-0	
Carbon tetrachloride	ND	ug/L	1.0	1		05/23/08 18:27	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		05/23/08 18:27	108-90-7	
Chloroethane	ND	ug/L	1.0	1		05/23/08 18:27	75-00-3	
Chloroform	ND	ug/L	1.0	1		05/23/08 18:27	67-66-3	
Chloromethane	ND	ug/L	1.0	1		05/23/08 18:27	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		05/23/08 18:27	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		05/23/08 18:27	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.5	1		05/23/08 18:27	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		05/23/08 18:27	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		05/23/08 18:27	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		05/23/08 18:27	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		05/23/08 18:27	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		05/23/08 18:27	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		05/23/08 18:27	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		05/23/08 18:27	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		05/23/08 18:27	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		05/23/08 18:27	107-06-2	
1,2-Dichloroethene (Total)	ND	ug/L	1.0	1		05/23/08 18:27	540-59-0	
1,1-Dichloroethene	ND	ug/L	1.0	1		05/23/08 18:27	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		05/23/08 18:27	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		05/23/08 18:27	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		05/23/08 18:27	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		05/23/08 18:27	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		05/23/08 18:27	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		05/23/08 18:27	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		05/23/08 18:27	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		05/23/08 18:27	10061-02-6	
Ethylbenzene	ND	ug/L	1.0	1		05/23/08 18:27	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		05/23/08 18:27	87-68-3	
2-Hexanone	ND	ug/L	10.0	1		05/23/08 18:27	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		05/23/08 18:27	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		05/23/08 18:27	99-87-6	

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ANALYTICAL RESULTS

Project: Morrill-ANL
Pace Project No.: 6040555

Sample: PURGE WATER **Lab ID: 6040555001** Collected: 05/21/08 11:00 Received: 05/21/08 15:26 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 5030B/8260							
Methylene chloride	ND	ug/L	1.0	1		05/23/08 18:27	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	10.0	1		05/23/08 18:27	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		05/23/08 18:27	1634-04-4	
Naphthalene	ND	ug/L	10.0	1		05/23/08 18:27	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	1		05/23/08 18:27	103-65-1	
Styrene	ND	ug/L	1.0	1		05/23/08 18:27	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		05/23/08 18:27	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		05/23/08 18:27	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		05/23/08 18:27	127-18-4	
Toluene	ND	ug/L	1.0	1		05/23/08 18:27	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		05/23/08 18:27	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		05/23/08 18:27	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		05/23/08 18:27	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		05/23/08 18:27	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		05/23/08 18:27	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		05/23/08 18:27	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	2.5	1		05/23/08 18:27	96-18-4	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		05/23/08 18:27	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		05/23/08 18:27	108-67-8	
Vinyl chloride	ND	ug/L	1.0	1		05/23/08 18:27	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1		05/23/08 18:27	1330-20-7	
4-Bromofluorobenzene (S)	120	%	85-119	1		05/23/08 18:27	460-00-4	S6
Dibromofluoromethane (S)	98	%	85-114	1		05/23/08 18:27	1868-53-7	
1,2-Dichloroethane-d4 (S)	99	%	81-118	1		05/23/08 18:27	17060-07-0	
Toluene-d8 (S)	98	%	82-114	1		05/23/08 18:27	2037-26-5	
Preservation pH	1.0		0.10	1		05/23/08 18:27		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Morrill-ANL
Pace Project No.: 6040555

Sample: TRIP BLANK **Lab ID: 6040555002** Collected: 05/21/08 00:00 Received: 05/21/08 15:26 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 5030B/8260							
Acetone	ND	ug/L	10.0	1		05/23/08 18:42	67-64-1	
Benzene	ND	ug/L	1.0	1		05/23/08 18:42	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		05/23/08 18:42	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		05/23/08 18:42	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		05/23/08 18:42	75-27-4	
Bromoform	ND	ug/L	1.0	1		05/23/08 18:42	75-25-2	
Bromomethane	ND	ug/L	1.0	1		05/23/08 18:42	74-83-9	
2-Butanone (MEK)	ND	ug/L	10.0	1		05/23/08 18:42	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		05/23/08 18:42	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		05/23/08 18:42	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		05/23/08 18:42	98-06-6	
Carbon disulfide	ND	ug/L	5.0	1		05/23/08 18:42	75-15-0	
Carbon tetrachloride	ND	ug/L	1.0	1		05/23/08 18:42	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		05/23/08 18:42	108-90-7	
Chloroethane	ND	ug/L	1.0	1		05/23/08 18:42	75-00-3	
Chloroform	ND	ug/L	1.0	1		05/23/08 18:42	67-66-3	
Chloromethane	ND	ug/L	1.0	1		05/23/08 18:42	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		05/23/08 18:42	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		05/23/08 18:42	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.5	1		05/23/08 18:42	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		05/23/08 18:42	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		05/23/08 18:42	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		05/23/08 18:42	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		05/23/08 18:42	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		05/23/08 18:42	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		05/23/08 18:42	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		05/23/08 18:42	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		05/23/08 18:42	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		05/23/08 18:42	107-06-2	
1,2-Dichloroethene (Total)	ND	ug/L	1.0	1		05/23/08 18:42	540-59-0	
1,1-Dichloroethene	ND	ug/L	1.0	1		05/23/08 18:42	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		05/23/08 18:42	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		05/23/08 18:42	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		05/23/08 18:42	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		05/23/08 18:42	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		05/23/08 18:42	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		05/23/08 18:42	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		05/23/08 18:42	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		05/23/08 18:42	10061-02-6	
Ethylbenzene	ND	ug/L	1.0	1		05/23/08 18:42	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		05/23/08 18:42	87-68-3	
2-Hexanone	ND	ug/L	10.0	1		05/23/08 18:42	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		05/23/08 18:42	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		05/23/08 18:42	99-87-6	
Methylene chloride	ND	ug/L	1.0	1		05/23/08 18:42	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	10.0	1		05/23/08 18:42	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		05/23/08 18:42	1634-04-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Morrill-ANL
Pace Project No.: 6040555

Sample: TRIP BLANK **Lab ID: 6040555002** Collected: 05/21/08 00:00 Received: 05/21/08 15:26 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 5030B/8260							
Naphthalene	ND	ug/L	10.0	1		05/23/08 18:42	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	1		05/23/08 18:42	103-65-1	
Styrene	ND	ug/L	1.0	1		05/23/08 18:42	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		05/23/08 18:42	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		05/23/08 18:42	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		05/23/08 18:42	127-18-4	
Toluene	ND	ug/L	1.0	1		05/23/08 18:42	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		05/23/08 18:42	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		05/23/08 18:42	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		05/23/08 18:42	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		05/23/08 18:42	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		05/23/08 18:42	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		05/23/08 18:42	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	2.5	1		05/23/08 18:42	96-18-4	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		05/23/08 18:42	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		05/23/08 18:42	108-67-8	
Vinyl chloride	ND	ug/L	1.0	1		05/23/08 18:42	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1		05/23/08 18:42	1330-20-7	
4-Bromofluorobenzene (S)	120	%	85-119	1		05/23/08 18:42	460-00-4	S6
Dibromofluoromethane (S)	99	%	85-114	1		05/23/08 18:42	1868-53-7	
1,2-Dichloroethane-d4 (S)	100	%	81-118	1		05/23/08 18:42	17060-07-0	
Toluene-d8 (S)	98	%	82-114	1		05/23/08 18:42	2037-26-5	
Preservation pH	1.0		0.10	1		05/23/08 18:42		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Morrill-ANL
Pace Project No.: 6040555

QC Batch: OEXT/11602
QC Batch Method: EPA 504.1
Associated Lab Samples: 6040555001

Analysis Method: EPA 504.1
Analysis Description: GCS 504 EDB DBCP

METHOD BLANK: 329404
Associated Lab Samples: 6040555001

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	0.030	

LABORATORY CONTROL SAMPLE & LCSD: 329405 329406

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	.25	0.23	0.22	91	89	70-130	3	20	

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QUALITY CONTROL DATA

Project: Morrill-ANL
Pace Project No.: 6040555

QC Batch: MSV/14706
QC Batch Method: EPA 5030B/8260
Analysis Method: EPA 5030B/8260
Analysis Description: 8260 MSV Water 10 mL Purge
Associated Lab Samples: 6040555001, 6040555002

METHOD BLANK: 329662
Associated Lab Samples: 6040555001, 6040555002

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	
1,1,1-Trichloroethane	ug/L	ND	1.0	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	
1,1,2-Trichloroethane	ug/L	ND	1.0	
1,1-Dichloroethane	ug/L	ND	1.0	
1,1-Dichloroethene	ug/L	ND	1.0	
1,1-Dichloropropene	ug/L	ND	1.0	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	
1,2,3-Trichloropropane	ug/L	ND	2.5	
1,2,4-Trichlorobenzene	ug/L	3.9	1.0	B-
1,2,4-Trimethylbenzene	ug/L	ND	1.0	
1,2-Dibromo-3-chloropropane	ug/L	ND	2.5	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	
1,2-Dichlorobenzene	ug/L	ND	1.0	
1,2-Dichloroethane	ug/L	ND	1.0	
1,2-Dichloroethene (Total)	ug/L	ND	1.0	
1,2-Dichloropropane	ug/L	ND	1.0	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	
1,3-Dichlorobenzene	ug/L	ND	1.0	
1,3-Dichloropropane	ug/L	ND	1.0	
1,4-Dichlorobenzene	ug/L	ND	1.0	
2,2-Dichloropropane	ug/L	ND	1.0	
2-Butanone (MEK)	ug/L	ND	10.0	
2-Chlorotoluene	ug/L	ND	1.0	
2-Hexanone	ug/L	ND	10.0	
4-Chlorotoluene	ug/L	ND	1.0	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	10.0	
Acetone	ug/L	ND	10.0	
Benzene	ug/L	ND	1.0	
Bromobenzene	ug/L	ND	1.0	
Bromochloromethane	ug/L	ND	1.0	
Bromodichloromethane	ug/L	ND	1.0	
Bromoform	ug/L	ND	1.0	
Bromomethane	ug/L	ND	1.0	
Carbon disulfide	ug/L	ND	5.0	
Carbon tetrachloride	ug/L	ND	1.0	
Chlorobenzene	ug/L	ND	1.0	
Chloroethane	ug/L	ND	1.0	
Chloroform	ug/L	ND	1.0	
Chloromethane	ug/L	ND	1.0	
cis-1,2-Dichloroethene	ug/L	ND	1.0	
cis-1,3-Dichloropropene	ug/L	ND	1.0	
Dibromochloromethane	ug/L	ND	1.0	

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QUALITY CONTROL DATA

Project: Morrill-ANL
Pace Project No.: 6040555

METHOD BLANK: 329662

Associated Lab Samples: 6040555001, 6040555002

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Dibromomethane	ug/L	ND	1.0	
Dichlorodifluoromethane	ug/L	ND	1.0	
Ethylbenzene	ug/L	ND	1.0	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	
Methyl-tert-butyl ether	ug/L	ND	1.0	
Methylene chloride	ug/L	ND	1.0	
n-Butylbenzene	ug/L	1.1	1.0	B-
n-Propylbenzene	ug/L	ND	1.0	
Naphthalene	ug/L	ND	10.0	
p-Isopropyltoluene	ug/L	ND	1.0	
sec-Butylbenzene	ug/L	ND	1.0	
Styrene	ug/L	ND	1.0	
tert-Butylbenzene	ug/L	ND	1.0	
Tetrachloroethene	ug/L	ND	1.0	
Toluene	ug/L	ND	1.0	
trans-1,2-Dichloroethene	ug/L	ND	1.0	
trans-1,3-Dichloropropene	ug/L	ND	1.0	
Trichloroethene	ug/L	ND	1.0	
Trichlorofluoromethane	ug/L	ND	1.0	
Vinyl chloride	ug/L	ND	1.0	
Xylene (Total)	ug/L	ND	3.0	
1,2-Dichloroethane-d4 (S)	%	98	81-118	
4-Bromofluorobenzene (S)	%	119	85-119	
Dibromofluoromethane (S)	%	99	85-114	
Toluene-d8 (S)	%	98	82-114	

LABORATORY CONTROL SAMPLE: 329663

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	10	10.8	108	77-127	
1,1,1-Trichloroethane	ug/L	10	9.8	98	78-130	
1,1,2,2-Tetrachloroethane	ug/L	10	10.7	107	73-131	
1,1,2-Trichloroethane	ug/L	10	9.6	96	85-126	
1,1-Dichloroethane	ug/L	10	9.5	95	76-124	
1,1-Dichloroethene	ug/L	10	9.7	97	76-129	
1,1-Dichloropropene	ug/L	10	9.6	96	83-125	
1,2,3-Trichlorobenzene	ug/L	10	11.1	111	78-129	
1,2,3-Trichloropropane	ug/L	10	10	100	69-117	
1,2,4-Trichlorobenzene	ug/L	10	11.7	117	79-127	
1,2,4-Trimethylbenzene	ug/L	10	9.6	96	82-124	
1,2-Dibromo-3-chloropropane	ug/L	10	11.3	113	62-141	
1,2-Dibromoethane (EDB)	ug/L	10	9.7	97	85-124	
1,2-Dichlorobenzene	ug/L	10	9.6	96	85-123	
1,2-Dichloroethane	ug/L	10	9.7	97	77-129	

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QUALITY CONTROL DATA

Project: Morrill-ANL
Pace Project No.: 6040555

LABORATORY CONTROL SAMPLE: 329663

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethene (Total)	ug/L	20	19.2	96	81-127	
1,2-Dichloropropane	ug/L	10	9.6	96	82-121	
1,3,5-Trimethylbenzene	ug/L	10	9.8	98	85-122	
1,3-Dichlorobenzene	ug/L	10	9.7	97	84-121	
1,3-Dichloropropane	ug/L	10	9.6	96	86-121	
1,4-Dichlorobenzene	ug/L	10	9.5	95	83-121	
2,2-Dichloropropane	ug/L	10	11.6	116	47-154	
2-Butanone (MEK)	ug/L	25	24.7	99	64-126	
2-Chlorotoluene	ug/L	10	9.8	98	83-125	
2-Hexanone	ug/L	25	26.2	105	65-128	
4-Chlorotoluene	ug/L	10	10	100	84-121	
4-Methyl-2-pentanone (MIBK)	ug/L	25	17.9	71	64-121	
Acetone	ug/L	25	26.4	106	52-139	
Benzene	ug/L	10	9.3	93	87-117	
Bromobenzene	ug/L	10	9.8	98	83-126	
Bromochloromethane	ug/L	10	9.8	98	82-129	
Bromodichloromethane	ug/L	10	10.1	101	75-127	
Bromoform	ug/L	10	12.7	127	64-133	
Bromomethane	ug/L	10	9.2	92	21-188	
Carbon disulfide	ug/L	10	9.8	98	53-120	
Carbon tetrachloride	ug/L	10	10.2	102	76-131	
Chlorobenzene	ug/L	10	9.7	97	85-120	
Chloroethane	ug/L	10	9.4	94	69-126	
Chloroform	ug/L	10	9.3	93	79-126	
Chloromethane	ug/L	10	9.7	97	44-118	
cis-1,2-Dichloroethene	ug/L	10	9.5	95	79-128	
cis-1,3-Dichloropropene	ug/L	10	10	100	76-122	
Dibromochloromethane	ug/L	10	12.0	120	74-121	
Dibromomethane	ug/L	10	9.3	93	75-130	
Dichlorodifluoromethane	ug/L	10	10.5	105	12-132	
Ethylbenzene	ug/L	10	9.8	98	84-123	
Hexachloro-1,3-butadiene	ug/L	10	9.2	92	71-144	
Isopropylbenzene (Cumene)	ug/L	10	10.0	100	72-107	
Methyl-tert-butyl ether	ug/L	10	9.3	93	69-115	
Methylene chloride	ug/L	10	9.3	93	74-132	
n-Butylbenzene	ug/L	10	8.7	87	80-126	
n-Propylbenzene	ug/L	10	9.9	99	83-123	
Naphthalene	ug/L	10	11.8	118	61-150	
p-Isopropyltoluene	ug/L	10	9.2	92	82-118	
sec-Butylbenzene	ug/L	10	9.4	94	84-121	
Styrene	ug/L	10	10	100	84-128	
tert-Butylbenzene	ug/L	10	8.9	89	83-124	
Tetrachloroethene	ug/L	10	9.6	96	83-126	
Toluene	ug/L	10	9.3	93	81-124	
trans-1,2-Dichloroethene	ug/L	10	9.7	97	80-130	
trans-1,3-Dichloropropene	ug/L	10	10.2	102	75-122	
Trichloroethene	ug/L	10	8.7	87	80-130	
Trichlorofluoromethane	ug/L	10	9.0	90	65-113	

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: Morrill-ANL
Pace Project No.: 6040555

LABORATORY CONTROL SAMPLE: 329663

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Vinyl chloride	ug/L	10	9.6	96	59-124	
Xylene (Total)	ug/L	30	30.0	100	83-125	
1,2-Dichloroethane-d4 (S)	%			94	81-118	
4-Bromofluorobenzene (S)	%			103	85-119	
Dibromofluoromethane (S)	%			100	85-114	
Toluene-d8 (S)	%			100	82-114	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: Morrill-ANL
Pace Project No.: 6040555

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

Pace Analytical is NELAP accredited. Contact your Pace PM for the current list of accredited analytes.

BATCH QUALIFIERS

Batch: MSV/14706

[1] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

ANALYTE QUALIFIERS

B- Analyte detected in method blank but was not detected in the associated samples.

S6 Surrogate recovery outside control limits. Data accepted based on valid recovery of applicable surrogates (no analytes associated with this surrogate)

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Morrill-ANL
Pace Project No.: 6040555

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
6040555001	PURGE WATER	EPA 504.1	OEXT/11602	EPA 504.1	GCSV/5078
6040555001	PURGE WATER	EPA 5030B/8260	MSV/14706		
6040555002	TRIP BLANK	EPA 5030B/8260	MSV/14706		

Pace Analytical®

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

1051452

Section A Required Client Information:

Company	Larsen + Associates
Address	1311 E 25th St. Suite B
Email To:	L Larsen
Phone	785-841-8707
Fax	785-865-4282
Requested Due Date/TAT:	24 hr turnover

Section B Required Project Information:

Report To:	Lisa Larsen
Copy To:	Brooke Evans
Purchase Order No.:	
Project Name:	Morrill - ANL
Project Number:	

Section C Invoice Information:

Attention:	Lisa Larsen
Company Name:	
Address:	
Pace Quote Reference:	
Pace Project Manager:	
Pace Profile #:	

REGULATORY AGENCY

☐ NPDES ☒ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ Other_____

SITE LOCATION: ☐GA ☐IL ☐IN ☐MI ☐MN ☐NC ☐OH ☐SC ☐WI ☐OTHER_____

Section D Required Client Information

SAMPLE ID

One Character per box. (A-Z, 0-9 / -)
Samples IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE	SAMPLE TYPE G=GRAB C=COMP	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Filtered (Y/N)	Requested Analysis: Full Voc EAR VOA Vials	Residual Chlorine (Y/N)	Pace Project Number / Lab I.D
1	Purge water 3D6AH 2D6AT	WW	G	1803N	1.5	5/21	1100		6				3		2		1	X	X X		001
2																					
3	Trip Blank 1D6AH								1								1	X			002
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					

Additional Comments:

Trip Blank shared w/ Powhattan

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITION
Randy Ackerman / Larsen	5/21/08	1430		5/21/08	1526	0.9 / Y/N / Y/N / Y/N
						Y/N / Y/N / Y/N / Y/N
						Y/N / Y/N / Y/N / Y/N

Temp in °C | Received on Ice | Custody Sealed Cooler | Samples Intact

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Randy Ackerman

SIGNATURE of SAMPLER: Randy Ackerman

DATE Signed (MM / DD / YY): 5/21/08

SEE REVERSE SIDE FOR INSTRUCTIONS

ORIGINAL

ALLQ020rev.3,31Mar05

Pace Analytical

Sample Condition Upon Receipt

Client Name: Larsen Project # 6046555

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☑ Client ☐ Commercial ☐ Pace Other _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals intact: ☐ yes ☑ no

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☐ None ☑ Other foam

Thermometer Used T-168 / T-169 Type of Ice: (Wet) Blue None ☐ Samples on ice, cooling process has begun

Cooler Temperature 0.9°C Biological Tissue is Frozen: Yes No

Temp should be above freezing to 6°C

Optional
Proj. Due Date:
Proj. Name: 5122
Murrill-ANC

Date and Initials of person examining contents: 5/21/08 (XA) 1543

			Comments:
Chain of Custody Present:	☑Yes	☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes	☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes	☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes	☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes	☐No ☐N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes	☑No ☐N/A	6.
Rush Turn Around Time Requested:	☑Yes	☐No ☐N/A	7. 1 day
Sufficient Volume:	☑Yes	☐No ☐N/A	8.
Correct Containers Used:	☑Yes	☐No ☐N/A	9.
-Pace Containers Used:	☑Yes	☐No ☐N/A	
Containers Intact:	☑Yes	☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes	☐No ☑N/A	11.
Sample Labels match COC:	☑Yes	☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix: WT			
All containers needing preservation have been checked.	☐Yes	☑No ☐N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	☑Yes	☐No ☐N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	☑Yes	☐No	Initial when completed: (XA) Lot # of added preservative:
Samples checked for dechlorination:	☐Yes	☐No ☑N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes	☑No ☐N/A	15.
Trip Blank Present:	☑Yes	☐No ☐N/A	16.
Trip Blank Custody Seals Present	☐Yes	☑No ☐N/A	
Pace Trip Blank Lot # (if purchased): 031708-3			DEQ ti ma Ga

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: Lisa Larsen Date/Time: 5-21-08

Comments/ Resolution: Informed client we did not receive a container that we can analyze the nitrate. SDL

Project Manager Review: SDL 5.21.08 Date: _____

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Appendix D:

Data Summary for Verification VOCs Analyses by Envirosystems, Inc.

ENVIROSYSTEMS, INC.

9200 Rumsey Road • Suite B102 • Columbia, Maryland 21045-1934
Phone (410) 964-0330 • Fax (410) 740-9306
Email: info@envsystems.com • Webpage: www.envsystems.com/envsys

Jorge S. Alvarado, Ph.D
Argonne National Laboratory
Environmental Research Division
Applied Geoscience and Environmental
Management Section
9700 South Cass Avenue, ER-203
Argonne, Illinois 60439

RE: Report# 080170

Dear Jorge:

Enclosed are the results of analysis for the samples received on April 14, 2008 for volatile organics analysis by US EPA 8260B. The analytical results for this data package had been submitted by email as requested by you.

Please do not hesitate to call me if you have any questions, comments, or require additional information.

Sincerely,

Mohan Khare

Mohan Khare, Ph.D
President/CEO

MK/ncc

1.0 Narrative

Narrative

This analytical data package contains the volatile organic analysis by USEPA SW-846 method 8260 B and CLP protocols. These samples received April 16, 2008. The chain of Custody document in this report is in section 2.0, the analytical data summary is in section 3.1, sample data is in section 3.2, and standard raw QC data for BFB tuning, and MS/MSD in section 3.3 and 3.4 respectively.

2.0 Traffic Reports/ Chain of Custody Records

4785

MATRIX: Water
RECEIVING LAB: EnviroSystems
PROJECT/SITE: Morrill KS
SAMPLER(S) (Signature)

ARGONNE NATIONAL LABORATORY
CHAIN OF CUSTODY RECORD*

Shipping Container No.
Shipping Info:
ANL Field Contact (Name & Temporary Phone): Bob Sedivy (402) 465-9021

DATE OF COLLECTION	SAMPLE ID NUMBER(S)	Number of containers	ANALYSIS: VOC	REMARKS
April 14, 2008	MRMW15-W-23230	2	2	2 x 40mL for VOC
April 14, 2008	MRMW35-W-23233	2	2	2 x 40mL for VOC
April 14, 2008	MRWW75-W-23237	2	2	2 x 40mL for VOC
April 15, 2008	MRQCTB-W-23248	1	1	1 x 40mL for VOC

Relinquished by (Signature)	Date	Time	Received by (Signature)	Relinquished by (Signature)	Date	Time	Received by (Signature)
	4-15-08	14:45			04-16-08	9:45	

Relinquished by (Signature)	Date	Time	Received for Laboratory by	Date	Time	Remarks
						2°C cooler Temp

Y	N	FOR LAB USE ONLY
		Custody seal was intact when shipment received.
		Sample containers were intact when received.
		Shipment was at required temperature when received.
		Sample labels, Tags and COC agree.

*A sample is under custody if:
1. It is in your possession; or,
2. It is in your view, after having been in your possession; or,
3. It was in your possession and you locked it up; or,
4. It is in a designated secure area.

Argonne National Laboratory, Applied Geosciences & Environmental Mgt. Group, Environmental Research Division, 9700 S. Cass Avenue, Argonne, IL 60439

ER-160 (4-01)

3.0 VOA Data

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

ARGONNE SAMPLE NO.
MRMWIS-W-23230

Lab Name: ENVIROSYSTEMS, INC. Contract: N/A

Lab Code: ENVSYS Case No.: SAS No.: N/A SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: 0080405-01

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: H001005

Level: (low/med) LOW Date Received: 04/16/08

% Moisture: not dec. _____ Date Analyzed: 04/18/08

GC Column: RTX-624 ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl Chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-triflu	5.0	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon Disulfide	5.0	U
79-20-9	Methyl Acetate	5.0	U
75-09-2	Methylene Chloride	8.0	
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-Butyl Ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon Tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	5.0	U
108-88-3	Toluene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

ARGONNE SAMPLE NO.

MRMWIS-W-23230

Lab Name: ENVIROSYSTEMS, INC. Contract: N/A

Lab Code: ENVSYS Case No.: SAS No.: N/A SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: 0080405-01

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: H001005

Level: (low/med) LOW Date Received: 04/16/08

% Moisture: not dec. _____ Date Analyzed: 04/18/08

GC Column: RTX-624 ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
1330-20-7	Xylene (Total)	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
91-20-3	Naphthalene	10	U
75-65-0	tert-Butanol	5.0	U
108-20-3	Diisopropyl ether	10	U
637-92-3	Ethyl-tert-butyl ether	10	U
994-05-8	tert-Amyl methyl ether	10	U
919-94-8	tert-Amyl ethyl ether	10	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

ARGONNE SAMPLE NO.

MRMW3S-W-23233

Lab Name: ENVIROSYSTEMS, INC. Contract: N/A

Lab Code: ENVSYS Case No.: SAS No.: N/A SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: 0080405-02

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: H001006

Level: (low/med) LOW Date Received: 04/16/08

% Moisture: not dec. _____ Date Analyzed: 04/18/08

GC Column: RTX-624 ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl Chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-triflu	5.0	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon Disulfide	5.0	U
79-20-9	Methyl Acetate	5.0	U
75-09-2	Methylene Chloride	7.5	
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-Butyl Ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon Tetrachloride	8.2	
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	1.0	J
108-88-3	Toluene	1.2	J
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

ARGONNE SAMPLE NO.

MRMW3S-W-23233

Lab Name: ENVIROSYSTEMS, INC. Contract: N/A

Lab Code: ENVSYS Case No.: SAS No.: N/A SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: 0080405-02

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: H001006

Level: (low/med) LOW Date Received: 04/16/08

% Moisture: not dec. _____ Date Analyzed: 04/18/08

GC Column: RTX-624 ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
1330-20-7	Xylene (Total)	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
91-20-3	Naphthalene	10	U
75-65-0	tert-Butanol	5.0	U
108-20-3	Diisopropyl ether	10	U
637-92-3	Ethyl-tert-butyl ether	10	U
994-05-8	tert-Amyl methyl ether	10	U
919-94-8	tert-Amyl ethyl ether	10	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

ARGONNE SAMPLE NO.

MRMW7S-W-23237

Lab Name: ENVIROSYSTEMS, INC. Contract: N/A

Lab Code: ENVSYS Case No.: SAS No.: N/A SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: 0080405-03

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: H001007

Level: (low/med) LOW Date Received: 04/16/08

% Moisture: not dec. _____ Date Analyzed: 04/18/08

GC Column: RTX-624 ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl Chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-triflu	5.0	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon Disulfide	5.0	U
79-20-9	Methyl Acetate	5.0	U
75-09-2	Methylene Chloride	8.9	
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-Butyl Ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon Tetrachloride	10	
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	5.0	U
108-88-3	Toluene	1.4	J
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

ARGONNE SAMPLE NO.

MRMW7S-W-23237

Lab Name: ENVIROSYSTEMS, INC. Contract: N/A

Lab Code: ENVSYS Case No.: SAS No.: N/A SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: 0080405-03

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: H001007

Level: (low/med) LOW Date Received: 04/16/08

% Moisture: not dec. _____ Date Analyzed: 04/18/08

GC Column: RTX-624 ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
1330-20-7	Xylene (Total)	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
91-20-3	Naphthalene	10	U
75-65-0	tert-Butanol	5.0	U
108-20-3	Diisopropyl ether	10	U
637-92-3	Ethyl-tert-butyl ether	10	U
994-05-8	tert-Amyl methyl ether	10	U
919-94-8	tert-Amyl ethyl ether	10	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

ARGONNE SAMPLE NO.

MRQCTB-W-23248

Lab Name: ENVIROSYSTEMS, INC. Contract: N/A

Lab Code: ENVSYS Case No.: SAS No.: N/A SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: 0080405-04

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: H001010

Level: (low/med) LOW Date Received: 04/16/08

% Moisture: not dec. _____ Date Analyzed: 04/18/08

GC Column: RTX-624 ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl Chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-triflu	5.0	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon Disulfide	5.0	U
79-20-9	Methyl Acetate	5.0	U
75-09-2	Methylene Chloride	6.5	
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-Butyl Ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon Tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	5.0	U
108-88-3	Toluene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

ARGONNE SAMPLE NO.

MRQCTB-W-23248

Lab Name: ENVIROSYSTEMS, INC. Contract: N/A

Lab Code: ENVSYS Case No.: SAS No.: N/A SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: 0080405-04

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: H001010

Level: (low/med) LOW Date Received: 04/16/08

% Moisture: not dec. _____ Date Analyzed: 04/18/08

GC Column: RTX-624 ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
1330-20-7	Xylene (Total)	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
91-20-3	Naphthalene	10	U
75-65-0	tert-Butanol	5.0	U
108-20-3	Diisopropyl ether	10	U
637-92-3	Ethyl-tert-butyl ether	10	U
994-05-8	tert-Amyl methyl ether	10	U
919-94-8	tert-Amyl ethyl ether	10	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

ARGONNE SAMPLE NO.

VBLKGG

Lab Name: ENVIROSYSTEMS, INC. Contract: N/A

Lab Code: ENVSYS Case No.: SAS No.: N/A SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: 0000848-BLK1

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: H001003

Level: (low/med) LOW Date Received: 04/16/08

% Moisture: not dec. _____ Date Analyzed: 04/18/08

GC Column: RTX-624 ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl Chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-triflu	5.0	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon Disulfide	5.0	U
79-20-9	Methyl Acetate	5.0	U
75-09-2	Methylene Chloride	9.4	
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-Butyl Ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon Tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	5.0	U
108-88-3	Toluene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

ARGONNE SAMPLE NO.

VBLKGG

Lab Name: ENVIROSYSTEMS, INC. Contract: N/A

Lab Code: ENVSYS Case No.: SAS No.: N/A SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: 0000848-BLK1

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: H001003

Level: (low/med) LOW Date Received: 04/16/08

% Moisture: not dec. _____ Date Analyzed: 04/18/08

GC Column: RTX-624 ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
1330-20-7	Xylene (Total)	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
91-20-3	Naphthalene	10	U
75-65-0	tert-Butanol	5.0	U
108-20-3	Diisopropyl ether	10	U
637-92-3	Ethyl-tert-butyl ether	10	U
994-05-8	tert-Amyl methyl ether	10	U
919-94-8	tert-Amyl ethyl ether	10	U

ENVIROSYSTEMS, INC.

9200 Rumsey Road • Suite B102 • Columbia, Maryland 21045-1934
Phone (410) 964-0330 • Fax (410) 740-9306
Email: info@envsystems.com • Webpage: www.envsystems.com/envsys

Jorge S. Alvarado, Ph.D
Argonne National Laboratory
Environmental Research Division
Applied Geoscience and Environmental
Management Section
9700 South Cass Avenue, ER-203
Argonne, Illinois 60439

RE: Report# 080186

Dear Jorge:

Enclosed are the results of analysis for the samples received on April 23, 2008 for volatile organics analysis by US EPA 8260B. The analytical results for this data package had been submitted as email as requested by you.

Please do not hesitate to call me if you have any questions, comments, or require additional information.

Sincerely,

Mohan Khare, Ph.D
President/CEO

MK/ncc

1. Narrative

Narrative

This analytical data package contains the volatile organic analysis by USEPA SW-846 method 8260 B and CLP protocols for samples received April 23, 2008.

The Chain of Custody document for this report is in section 2, the analytical data summary, sample data, and standards data is in section 3.

2. Traffic Reports/ Chain of Custody Records

4787

MATRIX: Water

RECEIVING LAB: Enviro Systems

PROJECT/SITE: Morrill KS

SAMPLER(S) (Signature)

ARGONNE NATIONAL LABORATORY
CHAIN OF CUSTODY RECORD*

Shipping Container No.

Shipping Info:

ANL Field Contact (Name & Temporary Phone): Bob Sedivy (402) 465 9021

DATE OF COLLECTION	SAMPLE ID NUMBER(S)	Number of containers	ANALYSIS: VOC	REMARKS
April 22, 2008	MRMW15-W-23259	2	2	2x 40mL for VOC
	MRMW35-W-23260	2	2	
	MRMW11S-W-23261	2	2	
	MRISCH-W-23262	2	2	
	MRTD12-W-23264	2	2	2x 40 mL for VOC
April 22, 2008	MRQCTB-W-23263	1	1	1x 40 mL for VOC

Relinquished by (Signature)	Date	Time	Received by (Signature)	Relinquished by (Signature)	Date	Time	Received by (Signature)
	4-22-08	15:46					

Relinquished by (Signature)	Date	Time	Received for Laboratory by	Date	Time	Remarks
			Barbara Crook	4/23/08	9 30	Temp 3°C

Y	N	FOR LAB USE ONLY
✓		Custody seal was intact when shipment received.
✓		Sample containers were intact when received.
✓		Shipment was at required temperature when received.
		Sample labels, Tags and COC agree.

*A sample is under custody if:
1. It is in your possession; or,
2. It is in your view, after having been in your possession; or,
3. It was in your possession and you locked it up; or,
4. It is in a designated secure area.

Argonne National Laboratory, Applied Geosciences & Environmental Mgt. Group, Environmental Research Division, 9700 S. Cass Avenue, Argonne, IL 60439

ER-160 (4-01)

3. VOA Data

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

ARGONNE SAMPLE NO.

MRMWIS-W-23259

Lab Name: ENVIROSYSTEMS, INC. Contract: N/A

Lab Code: ENVSYS Case No.: SAS No.: N/A SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: 0080410-01

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: H001092

Level: (low/med) LOW Date Received: 04/23/08

% Moisture: not dec. _____ Date Analyzed: 04/23/08

GC Column: RTX-624 ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl Chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-triflu	5.0	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon Disulfide	5.0	U
79-20-9	Methyl Acetate	5.0	U
75-09-2	Methylene Chloride	3.0	J
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-Butyl Ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon Tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	5.0	U
108-88-3	Toluene	1.0	J
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

ARGONNE SAMPLE NO.

MRMWIS-W-23259

Lab Name: ENVIROSYSTEMS, INC. Contract: N/A

Lab Code: ENVSYS Case No.: SAS No.: N/A SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: 0080410-01

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: H001092

Level: (low/med) LOW Date Received: 04/23/08

% Moisture: not dec. _____ Date Analyzed: 04/23/08

GC Column: RTX-624 ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
1330-20-7	Xylene (Total)	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
91-20-3	Naphthalene	10	U
75-65-0	tert-Butanol	5.0	U
108-20-3	Diisopropyl ether	10	U
637-92-3	Ethyl-tert-butyl ether	10	U
994-05-8	tert-Amyl methyl ether	10	U
919-94-8	tert-Amyl ethyl ether	10	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

ARGONNE SAMPLE NO.

MRMWIS-W-23260

Lab Name: ENVIROSYSTEMS, INC. Contract: N/A

Lab Code: ENVSYS Case No.: SAS No.: N/A SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: 0080410-02

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: H001093

Level: (low/med) LOW Date Received: 04/23/08

% Moisture: not dec. _____ Date Analyzed: 04/23/08

GC Column: RTX-624 ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl Chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-triflu	5.0	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon Disulfide	5.0	U
79-20-9	Methyl Acetate	5.0	U
75-09-2	Methylene Chloride	3.1	J
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-Butyl Ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon Tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	5.0	U
108-88-3	Toluene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

ARGONNE SAMPLE NO.

MRMWIS-W-23260

Lab Name: ENVIROSYSTEMS, INC. Contract: N/A

Lab Code: ENVSYS Case No.: SAS No.: N/A SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: 0080410-02

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: H001093

Level: (low/med) LOW Date Received: 04/23/08

% Moisture: not dec. _____ Date Analyzed: 04/23/08

GC Column: RTX-624 ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
1330-20-7	Xylene (Total)	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
91-20-3	Naphthalene	10	U
75-65-0	tert-Butanol	5.0	U
108-20-3	Diisopropyl ether	10	U
637-92-3	Ethyl-tert-butyl ether	10	U
994-05-8	tert-Amyl methyl ether	10	U
919-94-8	tert-Amyl ethyl ether	10	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

ARGONNE SAMPLE NO.

MRMWIS-W-23261

Lab Name: ENVIROSYSTEMS, INC. Contract: N/A

Lab Code: ENVSYS Case No.: SAS No.: N/A SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: 0080410-03

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: H001094

Level: (low/med) LOW Date Received: 04/23/08

% Moisture: not dec. _____ Date Analyzed: 04/23/08

GC Column: RTX-624 ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl Chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-triflu	5.0	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon Disulfide	5.0	U
79-20-9	Methyl Acetate	5.0	U
75-09-2	Methylene Chloride	3.5	J
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-Butyl Ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	5.0	U
67-66-3	Chloroform	1.1	J
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon Tetrachloride	46	
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	5.0	U
108-88-3	Toluene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

ARGONNE SAMPLE NO.

MRMWIS-W-23261

Lab Name: ENVIROSYSTEMS, INC. Contract: N/A

Lab Code: ENVSYS Case No.: SAS No.: N/A SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: 0080410-03

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: H001094

Level: (low/med) LOW Date Received: 04/23/08

% Moisture: not dec. _____ Date Analyzed: 04/23/08

GC Column: RTX-624 ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
1330-20-7	Xylene (Total)	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
91-20-3	Naphthalene	10	U
75-65-0	tert-Butanol	5.0	U
108-20-3	Diisopropyl ether	10	U
637-92-3	Ethyl-tert-butyl ether	10	U
994-05-8	tert-Amyl methyl ether	10	U
919-94-8	tert-Amyl ethyl ether	10	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

ARGONNE SAMPLE NO.

MRMWIS-W-23262

Lab Name: ENVIROSYSTEMS, INC. Contract: N/A

Lab Code: ENVSYS Case No.: SAS No.: N/A SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: 0080410-04

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: H001095

Level: (low/med) LOW Date Received: 04/23/08

% Moisture: not dec. _____ Date Analyzed: 04/23/08

GC Column: RTX-624 ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl Chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-triflu	5.0	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon Disulfide	5.0	U
79-20-9	Methyl Acetate	5.0	U
75-09-2	Methylene Chloride	2.9	J
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-Butyl Ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon Tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	5.0	U
108-88-3	Toluene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

ARGONNE SAMPLE NO.

MRMWIS-W-23262

Lab Name: ENVIROSYSTEMS, INC. Contract: N/A

Lab Code: ENVSYS Case No.: SAS No.: N/A SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: 0080410-04

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: H001095

Level: (low/med) LOW Date Received: 04/23/08

% Moisture: not dec. _____ Date Analyzed: 04/23/08

GC Column: RTX-624 ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
1330-20-7	Xylene (Total)	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
91-20-3	Naphthalene	10	U
75-65-0	tert-Butanol	5.0	U
108-20-3	Diisopropyl ether	10	U
637-92-3	Ethyl-tert-butyl ether	10	U
994-05-8	tert-Amyl methyl ether	10	U
919-94-8	tert-Amyl ethyl ether	10	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

ARGONNE SAMPLE NO.

MRMWIS-W-23263

Lab Name: ENVIROSYSTEMS, INC. Contract: N/A

Lab Code: ENVSYS Case No.: SAS No.: N/A SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: 0080410-06

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: H001097

Level: (low/med) LOW Date Received: 04/23/08

% Moisture: not dec. _____ Date Analyzed: 04/23/08

GC Column: RTX-624 ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl Chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-triflu	5.0	U
67-64-1	Acetone	7.2	
75-15-0	Carbon Disulfide	5.0	U
79-20-9	Methyl Acetate	5.0	U
75-09-2	Methylene Chloride	2.9	J
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-Butyl Ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon Tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	5.0	U
108-88-3	Toluene	1.7	J
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

ARGONNE SAMPLE NO.

MRMWIS-W-23263

Lab Name: ENVIROSYSTEMS, INC. Contract: N/A

Lab Code: ENVSYS Case No.: SAS No.: N/A SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: 0080410-06

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: H001097

Level: (low/med) LOW Date Received: 04/23/08

% Moisture: not dec. _____ Date Analyzed: 04/23/08

GC Column: RTX-624 ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
1330-20-7	Xylene (Total)	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
91-20-3	Naphthalene	10	U
75-65-0	tert-Butanol	5.0	U
108-20-3	Diisopropyl ether	10	U
637-92-3	Ethyl-tert-butyl ether	10	U
994-05-8	tert-Amyl methyl ether	10	U
919-94-8	tert-Amyl ethyl ether	10	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

ARGONNE SAMPLE NO.

MRMWIS-W-23264

Lab Name: ENVIROSYSTEMS, INC. Contract: N/A

Lab Code: ENVSYS Case No.: SAS No.: N/A SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: 0080410-05

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: H001096

Level: (low/med) LOW Date Received: 04/23/08

% Moisture: not dec. _____ Date Analyzed: 04/23/08

GC Column: RTX-624 ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl Chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-triflu	5.0	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon Disulfide	5.0	U
79-20-9	Methyl Acetate	5.0	U
75-09-2	Methylene Chloride	3.1	J
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-Butyl Ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon Tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	5.0	U
108-88-3	Toluene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

ARGONNE SAMPLE NO.

MRMWIS-W-23264

Lab Name: ENVIROSYSTEMS, INC. Contract: N/A

Lab Code: ENVSYS Case No.: SAS No.: N/A SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: 0080410-05

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: H001096

Level: (low/med) LOW Date Received: 04/23/08

% Moisture: not dec. _____ Date Analyzed: 04/23/08

GC Column: RTX-624 ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
1330-20-7	Xylene (Total)	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	5.0	U
75-65-0	tert-Butanol	10	U
108-20-3	Diisopropyl ether	10	U
637-92-3	Ethyl-tert-butyl ether	10	U
994-05-8	tert-Amyl methyl ether	10	U
919-94-8	tert-Amyl ethyl ether	10	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

ARGONNE SAMPLE NO.

VBLKGK

Lab Name: ENVIROSYSTEMS, INC. Contract: N/A

Lab Code: ENVSYS Case No.: SAS No.: N/A SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: 0000852-BLK1

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: H001090

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 04/23/08

GC Column: RTX-624 ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl Chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-triflu	5.0	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon Disulfide	5.0	U
79-20-9	Methyl Acetate	5.0	U
75-09-2	Methylene Chloride	3.5	J
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-Butyl Ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon Tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	5.0	U
108-88-3	Toluene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

ARGONNE SAMPLE NO.

VBLKGK

Lab Name: ENVIROSYSTEMS, INC. Contract: N/A

Lab Code: ENVSYS Case No.: SAS No.: N/A SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: 0000852-BLK1

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: H001090

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 04/23/08

GC Column: RTX-624 ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
1330-20-7	Xylene (Total)	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
91-20-3	Naphthalene	10	U
75-65-0	tert-Butanol	5.0	U
108-20-3	Diisopropyl ether	10	U
637-92-3	Ethyl-tert-butyl ether	10	U
994-05-8	tert-Amyl methyl ether	10	U
919-94-8	tert-Amyl ethyl ether	10	U

ENVIROSYSTEMS, INC.

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Date: June-11-2008

Name: Jorge S. Alvarado Ph.D
Company: Argonne National Laboratory
Address: Enviromental Research Division
Applied Geosciences and Enviromental
Management Section
9700 South Cass Avenue
Bldg: 203, Room # A137
Lemont, IL 60439

RE: Report# 0080416

Dear Jorge,

Enclosed are the results of analyses for samples received by the laboratory on May 09, 2008 . If you have any questions concerning this report, please feel free to contact me.

Please do not hesitate to call if you have any questions, comments or require additional information

Sincerely,

Mohan Khare, Ph.D
President/ CEO

Report # 080190

1. Narrative

Narrative

This analytical data package contains the volatile organic analysis by USEPA SW-846 Method 8260B and CLP protocols for samples received April 25, 2008

The chain of custody document for this report is in section 2, the analytical data summary, sample data, and standard data is in section 3.

2. Traffic Reports/ Chain of Custody Records

4790

MATRIX: Water
RECEIVING LAB: Enviro Systems
PROJECT/SITE: Morrill KS
SAMPLER(S) (Signature)

ARGONNE NATIONAL LABORATORY
CHAIN OF CUSTODY RECORD*

Shipping Container No.
Shipping Info:
ANL Field Contact (Name & Temporary Phone): Bob Sedivy (402) 465-9021

DATE OF COLLECTION	SAMPLE ID NUMBER(S)	Number of containers	ANALYSIS: VOC	REMARKS
April 23, 2008	MRMW75-W-23265	2	2	2 x 40mL for VOC
April 23, 2008	MRMW55-W-23266	2	2	2 x 40mL for VOC
April 23, 2008	MRQCTB-W-23268	1	1	1 x 40mL for VOC

Relinquished by (Signature)	Date	Time	Received by (Signature)	Relinquished by (Signature)	Date	Time	Received by (Signature)
	4-24-08	15:21			4/25/08	9:30	Barbara Crook

Relinquished by (Signature)	Date	Time	Received for Laboratory by	Date	Time	Remarks
						Temp 2°C

Y	N	FOR LAB USE ONLY
		Custody seal was intact when shipment received.
		Sample containers were intact when received.
		Shipment was at required temperature when received.
		Sample labels, Tags and COC agree.

*A sample is under custody if:
1. It is in your possession; or,
2. It is in your view, after having been in your possession; or,
3. It was in your possession and you locked it up; or,
4. It is in a designated secure area.

Argonne National Laboratory, Applied Geosciences & Environmental Mgt. Group, Environmental Research Division, 9700 S. Cass Avenue, Argonne, IL 60439

ER-160 (4-01)

3. VOA Data

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

ARGONNE SAMPLE NO.

MRMW75-W-23265

Lab Name: ENVIROSYSTEMS, INC. Contract: N/A

Lab Code: ENVSYS Case No.: SAS No.: N/A SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: 0080416-04

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: H001290

Level: (low/med) LOW Date Received: 04/25/08

% Moisture: not dec. _____ Date Analyzed: 05/06/08

GC Column: RTX-624 ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl Chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-triflu	5.0	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon Disulfide	5.0	U
79-20-9	Methyl Acetate	5.0	U
75-09-2	Methylene Chloride	4.5	J
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-Butyl Ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon Tetrachloride	7.6	
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	1.2	J
108-88-3	Toluene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

ARGONNE SAMPLE NO.

MRMW75-W-23265

Lab Name: ENVIROSYSTEMS, INC. Contract: N/A

Lab Code: ENVSYS Case No.: SAS No.: N/A SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: 0080416-04

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: H001290

Level: (low/med) LOW Date Received: 04/25/08

% Moisture: not dec. _____ Date Analyzed: 05/06/08

GC Column: RTX-624 ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
1330-20-7	Xylene (Total)	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
91-20-3	Naphthalene	10	U
75-65-0	tert-Butanol	5.0	U
108-20-3	Diisopropyl ether	10	U
637-92-3	Ethyl-tert-butyl ether	10	U
994-05-8	tert-Amyl methyl ether	10	U
919-94-8	tert-Amyl ethyl ether	10	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

ARGONNE SAMPLE NO.

MRMW55-W-23266

Lab Name: ENVIROSYSTEMS, INC. Contract: N/A

Lab Code: ENVSYS Case No.: SAS No.: N/A SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: 0080416-05

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: H001291

Level: (low/med) LOW Date Received: 04/25/08

% Moisture: not dec. _____ Date Analyzed: 05/06/08

GC Column: RTX-624 ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl Chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-triflu	5.0	U
67-64-1	Acetone	9.5	
75-15-0	Carbon Disulfide	5.0	U
79-20-9	Methyl Acetate	5.0	U
75-09-2	Methylene Chloride	6.2	
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-Butyl Ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon Tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	1.2	J
108-88-3	Toluene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

ARGONNE SAMPLE NO.

MRMW55-W-23266

Lab Name: ENVIROSYSTEMS, INC. Contract: N/A

Lab Code: ENVSYS Case No.: SAS No.: N/A SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: 0080416-05

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: H001291

Level: (low/med) LOW Date Received: 04/25/08

% Moisture: not dec. _____ Date Analyzed: 05/06/08

GC Column: RTX-624 ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
1330-20-7	Xylene (Total)	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
91-20-3	Naphthalene	10	U
75-65-0	tert-Butanol	5.0	U
108-20-3	Diisopropyl ether	10	U
637-92-3	Ethyl-tert-butyl ether	10	U
994-05-8	tert-Amyl methyl ether	10	U
919-94-8	tert-Amyl ethyl ether	10	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

ARGONNE SAMPLE NO.

MRQCTB-W-23268

Lab Name: ENVIROSYSTEMS, INC. Contract: N/A

Lab Code: ENVSYS Case No.: SAS No.: N/A SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: 0080416-06

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: H001292

Level: (low/med) LOW Date Received: 04/25/08

% Moisture: not dec. _____ Date Analyzed: 05/06/08

GC Column: RTX-624 ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl Chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-triflu	5.0	U
67-64-1	Acetone	12	
75-15-0	Carbon Disulfide	5.0	U
79-20-9	Methyl Acetate	5.0	U
75-09-2	Methylene Chloride	9.1	
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-Butyl Ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon Tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	5.0	U
108-88-3	Toluene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	2.5	J

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

ARGONNE SAMPLE NO.

MRQCTB-W-23268

Lab Name: ENVIROSYSTEMS, INC. Contract: N/A

Lab Code: ENVSYS Case No.: SAS No.: N/A SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: 0080416-06

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: H001292

Level: (low/med) LOW Date Received: 04/25/08

% Moisture: not dec. _____ Date Analyzed: 05/06/08

GC Column: RTX-624 ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
1330-20-7	Xylene (Total)	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
91-20-3	Naphthalene	10	U
75-65-0	tert-Butanol	5.0	U
108-20-3	Diisopropyl ether	10	U
637-92-3	Ethyl-tert-butyl ether	10	U
994-05-8	tert-Amyl methyl ether	10	U
919-94-8	tert-Amyl ethyl ether	10	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

ARGONNE SAMPLE NO.

VBLKHP

Lab Name: ENVIROSYSTEMS, INC. Contract: N/A

Lab Code: ENVSYS Case No.: SAS No.: N/A SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: 0000873-BLK1

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: H001286

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 05/05/08

GC Column: RTX-624 ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl Chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-triflu	5.0	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon Disulfide	5.0	U
79-20-9	Methyl Acetate	5.0	U
75-09-2	Methylene Chloride	3.4	J
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-Butyl Ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon Tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	5.0	U
108-88-3	Toluene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

ARGONNE SAMPLE NO.

VBLKHP

Lab Name: ENVIROSYSTEMS, INC. Contract: N/A

Lab Code: ENVSYS Case No.: SAS No.: N/A SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: 0000873-BLK1

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: H001286

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 05/05/08

GC Column: RTX-624 ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
1330-20-7	Xylene (Total)	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
91-20-3	Naphthalene	10	U
75-65-0	tert-Butanol	5.0	U
108-20-3	Diisopropyl ether	10	U
637-92-3	Ethyl-tert-butyl ether	10	U
994-05-8	tert-Amyl methyl ether	10	U
919-94-8	tert-Amyl ethyl ether	10	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

ARGONNE SAMPLE NO.

VBLKHQ

Lab Name: ENVIROSYSTEMS, INC. Contract: N/A

Lab Code: ENVSYS Case No.: SAS No.: N/A SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: 0000874-BLK1

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: H001305

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 05/06/08

GC Column: RTX-624 ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl Chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-triflu	5.0	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon Disulfide	5.0	U
79-20-9	Methyl Acetate	5.0	U
75-09-2	Methylene Chloride	3.9	J
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-Butyl Ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon Tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	5.0	U
108-88-3	Toluene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

ARGONNE SAMPLE NO.

VBLKHQ

Lab Name: ENVIROSYSTEMS, INC. Contract: N/A

Lab Code: ENVSYS Case No.: SAS No.: N/A SDG No.: NA

Matrix: (soil/water) WATER Lab Sample ID: 0000874-BLK1

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: H001305

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 05/06/08

GC Column: RTX-624 ID: 0.18 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
591-78-6	2-Hexanone	5.0	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
1330-20-7	Xylene (Total)	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
91-20-3	Naphthalene	10	U
75-65-0	tert-Butanol	5.0	U
108-20-3	Diisopropyl ether	10	U
637-92-3	Ethyl-tert-butyl ether	10	U
994-05-8	tert-Amyl methyl ether	10	U
919-94-8	tert-Amyl ethyl ether	10	U

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